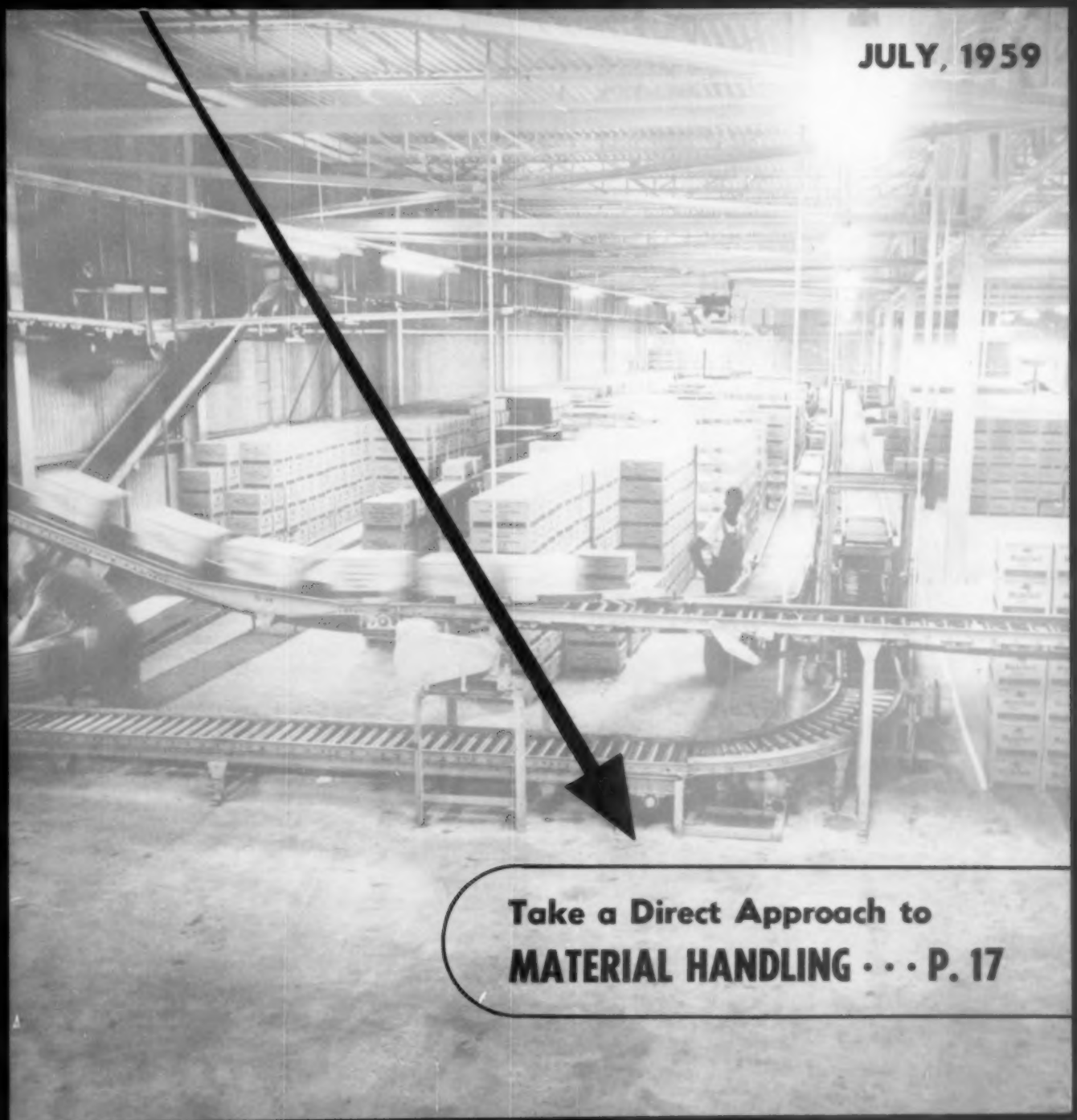
Southern Power & Industry

The Industrial and Power Journal of the South and Southwest



JULY, 1959

Take a Direct Approach to
MATERIAL HANDLING · · · P. 17

"Why slow up the job with special gears?"

when you can select what you need
from over 2000 standardized

BOSTON GEARS

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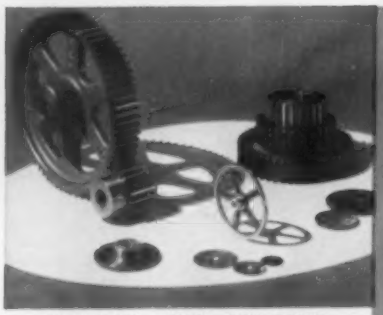
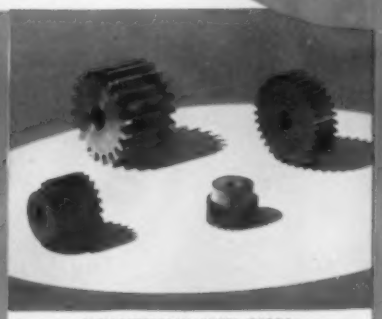
OFF-THE-SHELF
at factory prices



SPUR GEARS — STEEL, IRON, BRASS
14½° and 20° P.A. .208" to 40" P.D.

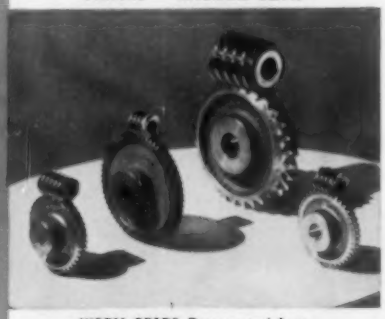


NON-METALLIC SPUR GEARS
14½° and 20° P.A. .938" to 6.667" P.D.

RACK • PINION WIRE
Steel and Brass 14½° and 20° P.A.
PINIONS • INTERNAL GEARS

BEVEL and MITER GEARS
Steel, Iron, and Brass 20° P.A.
.312" to 14" P.D.

STEEL SPIRAL MITERS 1" to 5" P.D.
HELICAL GEARS
Steel and Bronze .333" to 6" P.D.



WORM GEARS Bronze and Iron
.417" to 18" P.D. **WORMS** .333" to 4" P.D.
Soft Steel and hardened and ground steel

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Volume 77 Number 7

more POWER to you

There is power to spare in the Fuel Satisfaction coals mined along the Norfolk and Western. Once you have matched one of these fine coals to your particular specifications, you are ready for efficient production of steam and power.

Power-packed Fuel Satisfaction is high in heat value, low in sulphur and ash content. It is mined, sized, washed and dried with the most modern equipment and methods the mining industry can provide . . . and delivered to your plant economically and dependably by the N&W.

We believe our combustion engineers can help you produce more steam per dollar's worth of fuel. Let them meet with your engineers and purchasing director to determine your specific needs and to present a detailed picture of what Fuel Satisfaction can do for you.

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Ext. 3313, 423, 3249, 3732
Roanoke, Virginia

BOSTON
833 Chamber of Commerce Building
Telephone Liberty 2-2229
Boston 10, Massachusetts

CHICAGO
660-664 Marquette Building
140 S. Dearborn Street
Telephone RAndolph 6-4634
Chicago 3, Illinois

CINCINNATI
913 Dixie Terminal Building
Telephone DUnbar 1-1325
Cincinnati 2, Ohio

CLEVELAND
Room 722,
The Illuminating Building
Telephone MAin 1-7960
Cleveland 13, Ohio

DETROIT
1514 Book Building
Telephone
WOodward 1-2340 or 1-2341
Detroit 26, Michigan

ST. LOUIS
2059 Railway Exchange Building
Telephone MAin 1-1180
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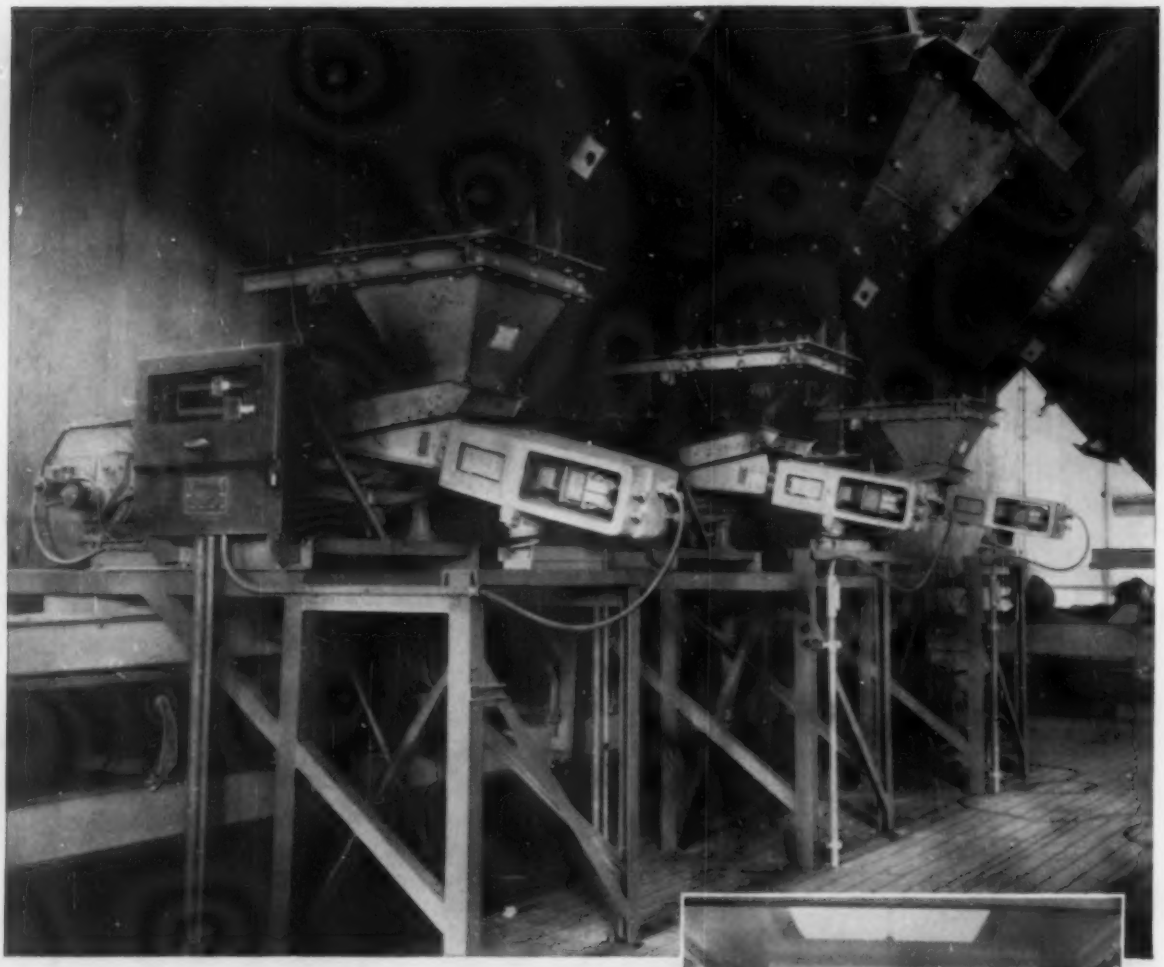

Jeffrey WAYTROLS® automatically proportion and feed raw materials

In this new cement plant, an automatic system incorporating Jeffrey WAYTROLS proportions and feeds raw materials. This permits mill operators to vary the rate at which the blended product is fed through process to suit requirements.

Jeffrey WAYTROLS can be used in many processes . . . can contribute to your plant efficiency. Where slurries or slimes are involved, WAYTROLS can provide accurate mix and fast low-cost processing. If just solid content is important, instruments can measure it and ignore water content.

For information on how Jeffrey processing equipment can help you, write The Jeffrey Manufacturing Company, 898 North Fourth Street, Columbus 16, Ohio.

These units (upper photo) are part of a group of 10 WAYTROLS in a new cement plant. Automatic controls (below) regulate raw feed ratios and control proportioning of materials.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

IBPA NBP

Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

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Facts and Trends

JULY 1, 1959

◆ ALUMINUM STRUCTURES — General Electric has received an order to design and build what is believed to be the nation's first rural electric cooperative substation using aluminum structures for Randolph Electric Membership Corp., Asheboro, N. C.

Structures will be of welded aluminum, fabricated at G-E's Philadelphia plant. According to A. P. Wall, manager of Randolph EMC, preference was given to aluminum structures because of its ease of handling for installation and lower maintenance costs. He estimated use of aluminum would cut installation time 33% to 50%.

◆ LOWER MAINTENANCE — A new type of high efficiency scrubber is presently being installed at the Mississippi Chemical Corp., Yazoo City, which will remove urea dust from the exhaust gases. The new scrubber is manufactured entirely of aluminum and is designed by the Western Precipitation Corp.

This new type scrubber utilizes the principle of impingement of the gas stream into the scrubbing fluid at extremely high velocity. It has no moving parts and is virtually maintenance free. It can be made of almost any type of material including corrosion resistant metal alloy and plastics.

◆ MORE NUCLEAR SCIENTISTS — Fifty scientists and engineers from 17 free world countries and seven from the United States received certificates from the International School of Nuclear Science and Engineering recently at the Argonne National Laboratory.

The 57 participants comprise the eighth class which has taken the academic and scientific program of the International School of Nuclear Science and Engineering. Many members of the ninth class are now taking a semester of introductory studies at North Carolina State College. They will begin their work at Argonne August 17.

◆ AUTOMATIC POWER PLANT — Louisiana Power & Light Co.'s Little Gypsy power generating station, scheduled for completion of the first 230,000 kw unit in 1961, will be the first fully automatic steam-electric generating station, according to W. O. Turner, president.

The Daystrom electronic computer control system is being incorporated into the new station, Mr. Turner said, primarily to maintain a high degree of efficiency and safety of operation. It will be able to handle, in proper sequence, the more than 800 operations of starting up the station, which requires about 4 1/2 hours. It can shut down the station instantaneously and safely under emergency conditions.

The computer, which will make the station fully automatic, nevertheless will not eliminate the need for operators. Three operators per shift, a normal complement for the first 230,000 kw will be necessary. In addition, the station will require the normal number of engineers and maintenance men.

◆ 1600 DEGREE BOLTS — Bolts for working temperatures to 1600 F — highest-heat standard fasteners ever offered — are described in new literature offered by Standard Pressed Steel Co. Previous

Facts and Trends (Continued)

high sustained temperature for standard aircraft bolts was 1200 F.

Application will be primarily for holding jet engine and rocket motors together at higher temperature and for structural use with hypersonic airframes and missiles. Gas and steam turbines and related fields are other possible application areas.

◆ CORROSION & DEPOSITS — Factors that cause destruction of boilers and gas turbines are reviewed and summarized in a new publication by The American Society of Mechanical Engineers.

Called "Corrosion and Deposits in Boilers and Gas Turbines," the report is designed to provide an up-to-date survey of all available knowledge in the field. Lists of references at the end of each chapter provide an extensive bibliography of published works. Private reports from British and American associations and questionnaires answered by manufacturing firms were also utilized in the preparation of the 198 page review. Price $6.00.

◆ PLASTIC PISTON RINGS — Self-lubricating plastic piston rings for compressors that last more than 20 times as long as conventional cast iron rings when exposed to wet hydrogen, and with a single ring taking the place of four of its metal counterparts, was demonstrated by Du Pont at the World Petroleum Congress.

Fabricated from a reinforced "Teflon" TFE-fluorocarbon resin, known to be slipperier than ice, the plastic rings easily withstand pressures as high as 4,500 pounds per square inch and perform well over a wide temperature range--from minus 320 F where conventional lubricants required with metal rings are useless, to 500 F where common lubricants vaporize.

◆ REPRINTS — Single copies of the special section on Material Handling in this issue will be supplied as long as supply lasts. Also, requests will be filled for reprints of articles published in earlier issues: Paint Systems, Coal Handling Level Controls, and Station Chemist's Inspection Reports. Write the editors.

◆ PLASTICS THAT WON'T BURN — Plastics would find ever greater uses, except for one major limitation: they tend to go up in smoke when exposed to flames or intense heat.

A highly chlorinated monomer has been synthesized in a project sponsored by the Ethyl Corp. and Stanford Research Institute. The monomer, in turn, has been polymerized into a plastic material that will not support combustion. In addition, the polymer produced has a high melting point, so that it can keep its shape even in boiling water. It is hoped that further experimentation will lead to fire resistant paints. And if the new monomer will combine with butadiene, then flame resistent rubber can be made for tires and electric wire coatings.

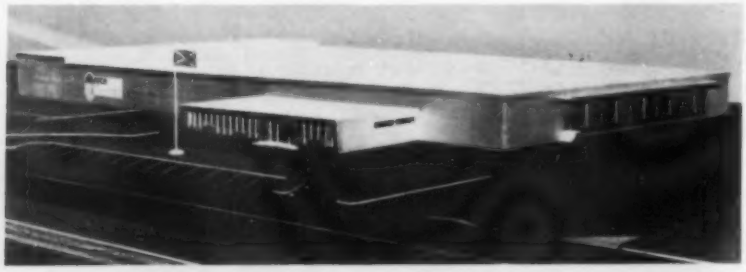
◆ SEMICONDUCTOR EXCITER — After six years of development work, Westinghouse is building a 180 kw, 250 v rotating rectifier system for use on an a-c generator. Expected to be in operation late in '59.

Mounted on the generator shaft, the system consists of an a-c exciter, and a rotating rectifier. The exciter's rotating armature output is fed along the shaft of the rotating rectifier. The rectifier's output, in turn, is fed to the field of the a-c turbine-generator. A regulator, acting on the field of the a-c exciter controls the strength of the a-c turbine-generator field. Thus, no current collecting brushes are required. Also, the conventional a-c generator field collector rings and the d-c exciter commutator are elimiated.

Write the editors for additional information on any of the above items.
SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 8, Ga.

the SOUTH—SOUTHWEST

more power . . . more plants . . . more money



Albritton Expands in Bryan, Tex.

Recently completed is a $500,000 expansion program for **Albritton Engineering Corp.** which consists of a new plant on a 33 acre tract in Bryan, Tex.

The plant contains 75,000 sq ft of floor space, of which 69,000 sq ft will be used for the manufacture of aluminum windows and screens. The remainder will be used for office area.

White Motors Plans Dallas Construction

Expected to get underway late this year is a $1,000,000 Dallas, Tex. branch and Southwest regional office for **White Motor Co.**

The new building, which will be erected on an 11 acre site, will contain approximately 80,000 sq ft of floor space.

Generators for Medina Electric

Cleaver-Brooks Company has been awarded a contract in excess of $1.5 million for three large steam generators for the **Medina Electric Cooperative, Inc.**, Hondo, Texas. The contract was awarded by the Rural Electrification Administration of the U. S. Department of Agriculture.

The contract calls for Cleaver-Brooks to manufacture and field erect three water tube steam generators each with a capacity of 235,000 pounds of steam an hour or a total capacity of 705,000 pounds of steam an hour.

The units will be manufactured by the Springfield Boiler Company, a wholly-owned subsidiary of Cleaver-Brooks.

The new generating plant will be constructed on 125 acres of land about 1¼ miles north of Pearsall, Texas. When completed it will have electric generating capacity of about 75,000 KW.

Field erection of the steam generators is scheduled for completion by December, 1960. The units will be installed out-of-doors and will include special all-weather protective exteriors.

$12 Million Expansion Set for Dow—La.

Twelve million dollars in new construction for **The Dow Chemical Company's** Louisiana Division, located at Plaquemine on the Mississippi River, is underway.

The expansion program includes a polyethylene plant, scheduled to go on stream in about 18 months, and facilities to produce vinylidene chloride and Chlorothene, with the production target about mid-1961.

Paper Bag Plant for Yazoo City, Miss.

$1,300,000 multi-wall paper bag plant is underway for **First Packaging Corp.** of Yazoo City, Miss.

When production starts in September, 40 tons of kraft paper will be used each month, and 125 persons will be employed.

Richard Port is vice president and general manager of the corporation.

Reynolds Metals Expands in Virginia

Expansion of three plants at Bellwood, Va. for **Reynolds Metals Co.** is underway with completion anticipated by fall. Cost of the projects will be in excess of $1,000,000.

The expansion includes: 100,000 sq ft addition to the foil carton printing plants; 30,000 sq ft addition to the extrusion plant; and 9,600 sq ft addition to the smelting plant.

Young & Selden Towson, Md.

Young & Selden Company, Baltimore, Maryland, largest manufacturing bank stationers, has begun construction on a new main office and manufacturing plant to be located north of Towson. The plant is being erected on a 5-acre tract with completion scheduled for late summer, at which time scattered operations will be consolidated.

The project is under the supervision of Egli & Gompf, engineers, and Wheeler, Bonn, Shockey & Assocs., architects. The contractor is the Mullan Contracting Company, Baltimore, Maryland.

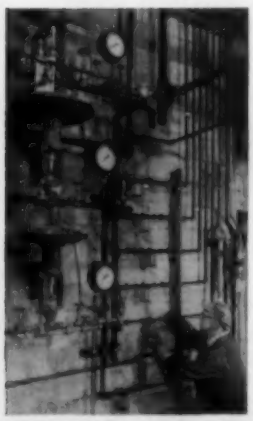
The new facility will contain approximately 67,000 sq ft of floor space, which will be used for manufacturing, warehousing, and other company operations.

SPANG Distributor: W. T. Andrew Company, Detroit, Michigan
Mechanical Contractor: Harrigan & Reid Company, Detroit, Michigan

SPANG Pipe gives Rinshed-Mason, paint manufacturers, the top-quality performance they need for their solvent lines.

"In 40 years of buying SPANG, we've never received one foot of defective pipe"

says Mr. William J. Whelan, Purchasing Agent for Harrigan & Reid Company, Detroit, Michigan



SPANG Pipe plays an especially important role at the inert gas reducing station. Any pipe failure in this system could be costly in terms of paint spoilage; finest materials must be used to insure reliable performance.

"*Reliability* is the one word that best characterizes SPANG Steel Pipe" reports Mr. Whelan. "Actually, there are three good reasons why we buy SPANG Pipe: one, SPANG prices are competitive in every respect; two, delivery adheres to promised commitments; three, SPANG quality is consistently high.

"In this piping installation at Rinshed-Mason Company, a major paint supplier for the automotive industry, *top-quality* pipe was especially important. Besides the plumbing and heating systems, we used SPANG Pipe extensively in the paint-processing system. This process piping carries raw materials and intermediate products from storage tanks to weighing tanks, then to production equipment.

"Altogether, approximately 40 different kinds of liquids are carried by this process piping, including vegetable oils, phthalic anhydride, and a variety of 16 solvents."

SPANG CAN MEET YOUR REQUIREMENTS, TOO. Whether you're installing plumbing and heating systems or more demanding systems of process piping, *quality-controlled* SPANG Steel Pipe is your best bet for reliable installations. Call your local SPANG Distributor for the *top-quality* steel pipe . . . SPANG Steel Pipe.

SPANG CW STEEL PIPE

THE NATIONAL SUPPLY COMPANY

Subsidiary of Armco Steel Corporation

TWO GATEWAY CENTER, PITTSBURGH, PA.

Nuclear Fuel Reprocessing Plant

Vitro Engineering Company, New York, has been awarded a contract to design and engineer a $3,500,000 pilot plant for reprocessing nuclear power reactor fuels at the **Oak Ridge National Laboratory**, Oak Ridge, Tennessee.

The new facility will combine existing chemical reprocessing pilot plants with new "head-end" cells to permit the dissolution and feed preparation of spent power reactor fuel elements. Under contract to the U. S. Atomic Energy Commission, Vitro is responsible for consultation, design and construction supervision of the new facilities. Process design and chemical criteria for the system are being developed by the Oak Ridge National Laboratory staff.

The new facility will permit reprocessing of fuel elements larger than any previously handled, clad with extremely corrosive resistant metals and alloys including stainless steel and zirconium.

Vitro Engineering Company, a division of Vitro Corporation of America, is engaged in the design, construction and operation of advanced facilities for government and industry in the nuclear energy, chemical process, metallurgical development and defense fields.

Linde Plant—Ala.

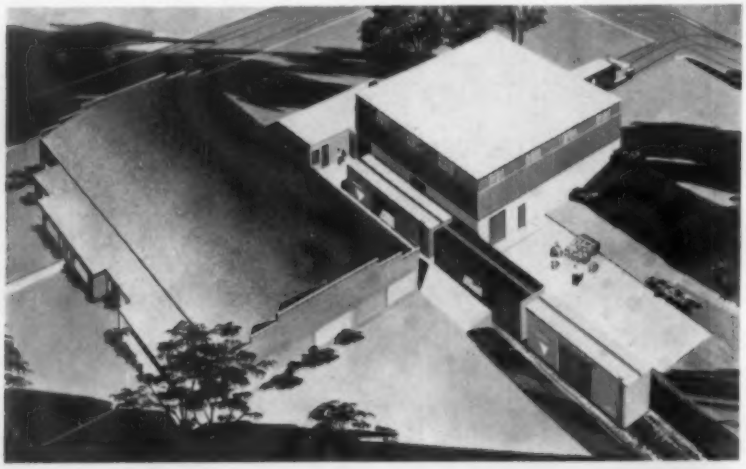
Linde Company, Division of Union Carbide Corporation, has set early 1960 as the completion date for a large liquid oxygen and nitrogen producing plant to be built near Huntsville, Alabama, in the vicinity of the Redstone Arsenal and the Tennessee River. It will be capable of producing 135 tons of liquid oxygen and nitrogen per day (equivalent to 100,000,000 cubic feet of gas per month).

According to J. L. Campbell, Linde Manager of Production in the Southern Region, engineering design work for the plant is already underway.

Southern Division Sales are under the supervision of **A. J. Andre** who

was formerly in charge of that operation at Charlotte, N. C. **Carl F. Ken-**

neck is plant superintendent for the Carrollton division. Both Mr. Andre and Mr. Kenneck will have offices in the new plant and will establish homes in Carrollton.



Houghton—Ga. Plant

E. F. Houghton & Co., manufacturers of paper, textile and metal processing products and specialized lubricants, is now serving Southern industry through its warehouse and office newly located in Carrollton, Georgia.

Construction has been virtually completed on a new plant adjoining the present warehouse and office. The plant was designed by Boroughs and Dale, Atlanta architects. The building construction is being done by W. O. Kilgore, general contractor of Carrollton, Georgia.

Upon completion of the installation of manufacturing equipment, defoamers, wetting agents, detergents, warp sizes, finishes, lubricants, metal working and heat treating products will be produced locally.

Carolina Blouse Plant—$1 Million

September completion is anticipated for the $1,000,000 plant for **Carolina Blouse Co.** in Greenville, S. C.

Contractor for the 133,000 sq ft plant is Daniel Construction Co.

Pecora Builds in Tex.

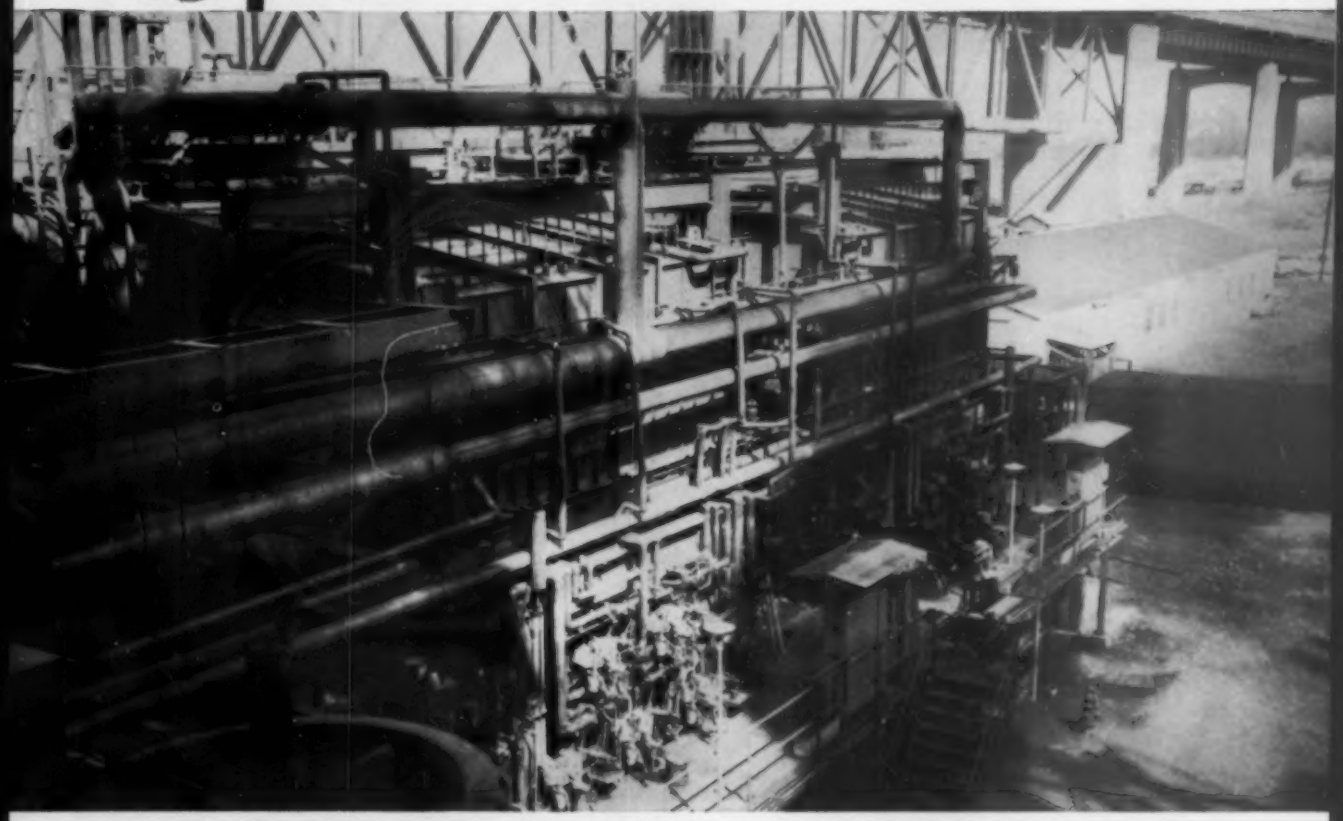
Construction is underway in Garland, Tex. on the 10,000 sq ft plant for **Pecora, Inc.**, manufacturers of calking compounds, tile adhesives, etc.

The plant is being erected on a 2 acre site and plant expansion to 250% of the initial area is provided in the site planning.

COPES VULCAN

BLAW-KNOX

How Copes-Vulcan control systems boost power plant efficiency



Outside boilers and boiler controls subject to severe weather, with temperatures as low as 10°F. Except for the central control panel, the Copes-Vulcan control system is entirely outdoors. Each boiler has a maximum continuous rating of 150,000 pounds per hour at 230 psig saturated.

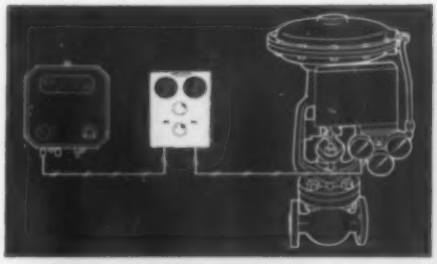
Copes-Vulcan boiler control meets unusual load conditions at Deepwater Station

Besides producing power for the Atlantic City Electric Company system, the Deepwater plant delivers steam to an adjacent chemical plant for process use.

To meet the fluctuating process demands, Copes-Vulcan controls the two low pressure boilers with precision responsiveness.

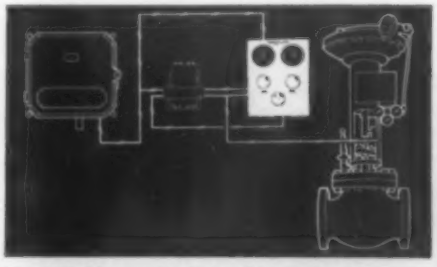
The system consists of: Combustion control . . . Copes Type 3-L Feedwater Control . . . Boiler feed pump recirculation control . . . and Vulcan rotary soot blowers. The system controls all equipment, permits each boiler to carry a different load. Control is automatic through the load range from 20,000 to a peak-load of 200,000 pounds per hour.

Whether your boiler is large or small, power or process, Copes-Vulcan can provide a unit or an integrated package, custom designed to your requirements. For details on the Deepwater Station, write for Bulletin 1057.



PNEUMATIC CONTROL STATIONS. Copes-Vulcan stations offer automatic-to-manual selection without the complication of seal balance. They indicate process-variable, controller, and manual loadings. Transfer is "bumpless" without process disturbance. Write for Bulletin 1031.

The AM-4 Selector Station (shown above) indicates an automatic loading—or originates a manual loading to the valve, power cylinder, or other control elements.



The AMS-4 Remote Set Station (shown above) permits manually adjustable set-point loading, or independent manual operation, of the control element.

Copes-Vulcan Division
BLAW-KNOX COMPANY
Erie 4, Pennsylvania

GSU Power Plant Slated for Texas

A 750-acre plant site two miles west of Bridge City, Tex. has been purchased by **Gulf States Utilities Co.**

Construction on the new multi-million dollar power plant will begin this year with the first unit scheduled to be in operation in 1962. An estimated $7½ million will be invested in total construction payroll until the first unit is completed and a permanent annual operating payroll of about $600,000 will be added to the area when the plant reaches 1,000,000 kilowatts of generating capability. The first turbo-generator will be a 220,000 kilowatt unit. Intake and discharge canals must be dug at the plant site to provide cooling water for the units, which, when completed, will require 750,000 gallons of water every minute.

T. O. "Doc" Charlton, district superintendent, emphasizes that GSU was, indeed, looking at the future when it planned the as yet unnamed power station.

The company's present total generating capability is 844,000 kilowatts, but it is scheduled to turn on another 111,000 kilowatt unit at Neches Station soon, as well as the first 111,000 kilowatt unit at the new Roy S. Nelson Station near Lake Charles, La., also designed for a total capability of 1,000,000 kilowatts.

In addition to Roy S. Nelson Station GSU is now building the new Willow Glen Power Station south of Baton Rouge, another 1,000,000 kilowatt plus station.

Du Pont Builds in S. C.

The **Du Pont Company** has begun construction of a plant to manufacture "Mylar" polyester film on a 954-acre site on the Pee Dee River ten miles east of Florence, S. C.

Cost of the installation is estimated at almost $20 million. Upon its completion early in 1961 the plant will create about 250 jobs, and employment will gradually increase to a total of about 500 when operations reach capacity.

The plant will be operated by the company's Film Department, which also manufactures cellophane, acetate film, cellulose seals, and other industrial and packaging films.

Strongest of the plastic films, "Mylar" is a transparent material of sparkling clarity. It has excellent electrical insulating properties, is resistant to attack by most chemicals, and retains its properties under extremes of heat and cold.

Multi-Million Glass Plant

A new multi-million dollar glass container manufacturing plant will be built on the outskirts of Asheville, N. C., by **Ball Brothers Company Incorporated.**

The plant will start up late in 1959 and will provide jobs for about 140 persons, half of them women. Employment would double if tentative expansion plans are carried out in the future.

The factory will be located on a 27-acre site near Skyland. Construction will take place in several stages. Earth moving and site clearance is underway and a 120,000 square foot warehouse will be built and placed in operation this summer. This will be followed by construction of a 15,000 square foot office and maintenance building and a 40,000 square foot manufacturing building.

Construction and operation of the plant will be under the general direction of W. Russell Bone, Director of Manufacturing and Engineering.

Power Plant for W. Texas Utilities

West Texas Utilities Company has announced plans for construction of new electric facilities in West Texas.

A new power plant will be constructed on a 117 acre tract in the northeast corner of Coke County, eleven and one-half miles north of Bronte and three and one-half miles south of Blackwell.

Construction of the new power plant will begin late 1959. The first 75,000 kilowatt unit is scheduled to be in operation in 1962. The ultimate capacity of the plant will be 225,000 kilowatts.

Hake Expansion—Va.

Construction has begun on the 60,000 sq ft plant for **Hake Manufacturing Co.** in Roanoke, Va.

According to George Kissak, president, the plastics plant is expected to be completed by fall.

Hosiery Mill—N. C.

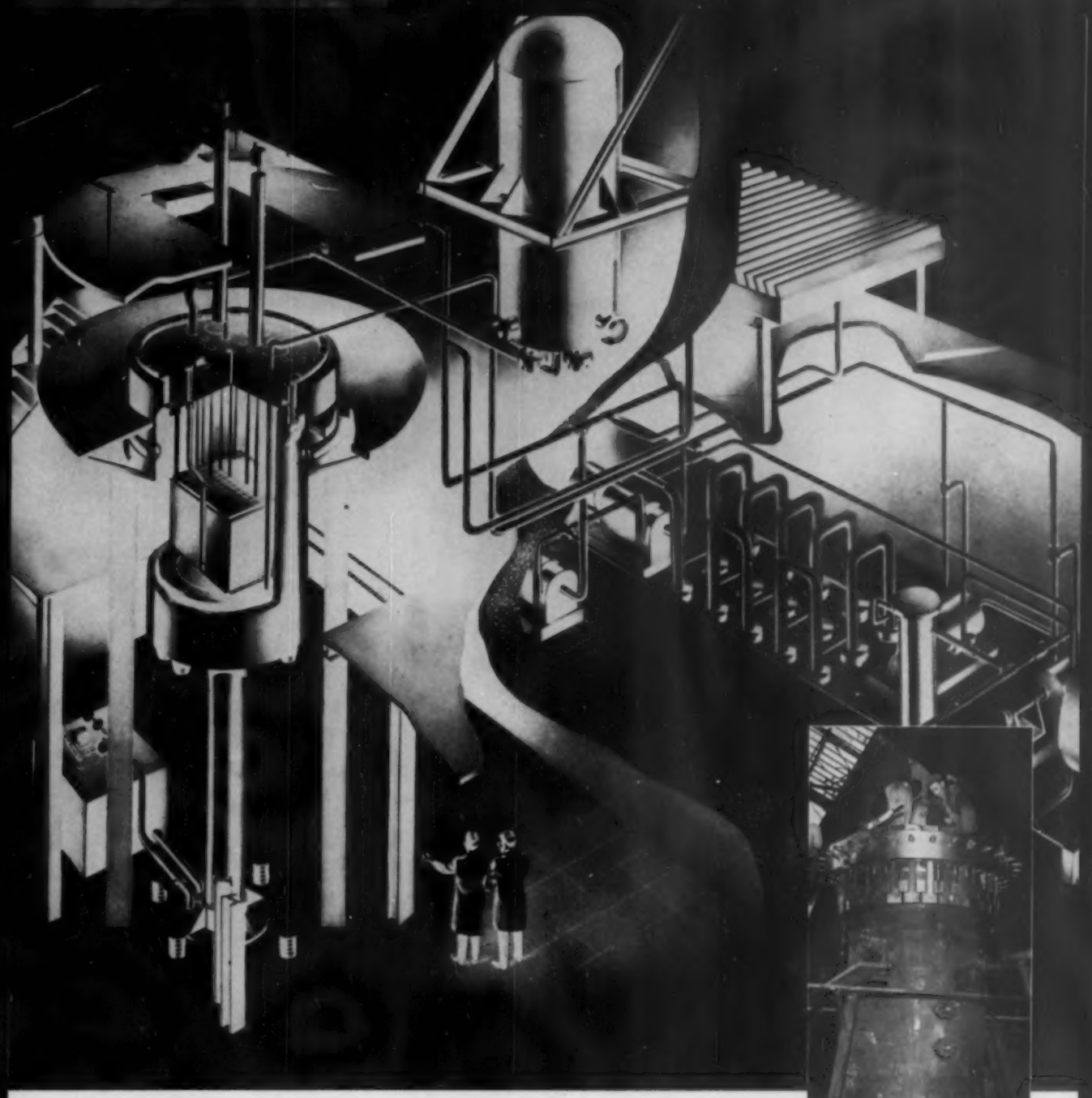
Plans are underway for construction of a $12,000,000 plant for **Hanes Hosiery Mills Co.** on a 750 acre tract in Winston-Salem, N. C.

The plant, which will employ 4,000 persons, will be built within five years, having a payroll in excess of $15,000,000 annually.

Elastic Plant—Tenn.

Underway for **Elastic Corp.** of Hickory, N. C. is a $200,000 plant in Chattanooga, Tenn. to manufacture elastic yarn for the hosiery and weaving trades.

Hugh Barlow will be manager of the plant.



The Proof Test Reactor Pressure Vessel, with quick-opening closure, in Kellogg's Jersey City plant just prior to shipment.

FIRST EVER BUILT

—this high-temperature nuclear test reactor was developed by Knolls Atomic Power Laboratory to confirm design data for reactor cores of the submarine Triton. Vital core components and instrumentation are housed in a 32½-ton stainless steel pressure vessel. Required to withstand 550 F., 1,500 psi, this vessel and its novel, quick-opening closure were designed and fabricated for KAPL by The M. W. Kellogg Company.

Additional examples of Kellogg's ability to design and fabricate nuclear equipment to the most exacting standards include the primary coolant stainless piping for two other nuclear plants. Kellogg is also designing and fabricating heat exchangers for still another nuclear plant. Kellogg's Fabricated Products Sales Division welcomes inquiries for the design and fabrication of nuclear equipment.

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M KELLOGG W

Anchor Metals—Anniston, Ala.

The new Anniston, Ala. division of **Anchor Metals, Inc.** of Hurst, Texas has begun plant renovation in a 175,000 sq ft building, formerly owned by J. E. Case Co., with partial operation expected to begin in August.

Personnel will come largely from the Anniston area, with some key personnel to be transferred from other Anchor Metals plants.

Anchor Metals, is engaged in the design and manufacture of steel electrical transmission towers and switchyard structures.

Steam Plant for Mead—N. C.

Since the first of the year, work crews have been clearing the area adjacent to **The Mead Corporation's** Sylva, North Carolina Division in preparation for the erection of a new steam plant for the paperboard mill.

Construction will get underway immediately and the new installation which will cost more than $1¼ million is expected to be completed about January 1, 1960. General contractor for the project is the Jamison Company of Atlanta, Georgia.

The new boiler, when completed, will tower 75 feet in the air. Its furnace, bigger than most two-car garages, will burn enough powdered coal each hour to heat an average home for a year. The water which will be evaporated into steam in the boiler each day will be sufficient to supply the needs of a city of 3,000 persons.

Babcock and Wilcox has fabricated and will install the new boiler designed to replace six older boilers which now supply the mill's steam requirements. However, one of the present boilers will be converted to burn bark from the wood used at Sylva.

The new boiler will generate 200,000 lb/hr of steam at 600 psi and 740 F. Provisions have been made so that the boiler can also be operated at 850 psi should it ever become desirable to generate electric power.

The boiler will be equipped with mechanical separators to control fly ash and a complete automatic combustion control system. Existing coal and ash handling facilities will be extended with Link-Belt coal conveyor, Stock coal scales, and United pneumatic ash handling.

Nylon Dev. Center — Pensacola, Fla.

Plans for a new Nylon Development Center have been announced by **Chemstrand Corp.**

It will be located near Pensacola, Fla., on the site of the Chemstrand nylon plant.

Major efforts of this center will be concentrated on development of improved properties of nylon for special uses, new nylon fiber products, process innovations to produce new types of nylon fibers, as well as fibers other than nylon, and special equipment associated with these developments. More than 150 scientists and technicians will be engaged in this work.

Construction of the required buildings will begin shortly with all facilities estimated to be completed early in 1960.

Soy Bean Mill

$1,500,000 soy bean processing plant to be erected for the **Co-operative Processing Association** in Van Buren, Ark.

The company will be affiliated with the Consumers Co-op of Kansas City, one of the largest manufacturers and distributors of farm products in the mid-west.

Completion will be before September 1 in time for the 1959 crop of soy beans.

Steel Mill—El Paso

Plans are being laid in El Paso, Tex. for construction of a semi-integrated steel mill, to be known as Southwestern Metals, Inc.

The plant will cost in excess of $3,000,000 and will employ 150-200 persons upon its completion in 1960. It will have a capacity of 35,000 tons per year. Soon after the first year of operation a 100% expansion is anticipated.

Milton Feinberg will be chairman of the board with **Bill Ramsey** serving as president of the corporation.

Engineers and designers of the plant are Swindell & Dressler Corp. of Pennsylvania.

PLANT PERSONNEL

Engineering-Management Promotions Announced by Major Southern Plants

Henry C. Tooley has been appointed plant manager for the Missouri City plant of W-K-M, a division of ACF Industries, Inc. He will be responsible for all manufacturing functions.

Joining Midwest Piping Co., Inc., St. Louis, Mo., as Industrial & Methods Engineer is **E. M. (Knute) Hansen.** He will be responsible for plant layout, machine tool selection, new tooling, production methods and automation processes for the company's plants in St. Louis, Clifton, N. J. and Los Angeles.

Succeeding the late A. C. Boisseau as Plant Manager of General Electric's Hickory, N. C. plant is **William M. Nave.**

John DeMoss has been appointed Director of Manufacturing for Poly-Scientific Corp. of Blacksburg, Va.

Norton Co. has appointed **Jacob J. Walter** a refractories engineer, making his headquarters at the Philadelphia District Office. He will cover D. C., Delaware, Virginia, eastern Pennsylvania, and parts of Maryland and N. J.

Gordon N. Dow has been named general manager of Leschen Wire Rope Div., H. K. Porter Co., Inc. in St. Louis, Mo.

General Pump Co. of Miami, Fla. has named **Richard Bousquet** production manager.

Charles Held, Jr. has been appointed general manager of Southern Envelope Manufacturers of Florida in Miami.

FUTURE EVENTS of Engineering Interest

Sept. 17-19: 41st Annual Meeting. Public Utilities Assoc. of the Virginias, The Greenbrier, White Sulphur Springs, W. Va. Robert W. McKinnon, Exec. Secy., PUAV, 602 First Federal Bldg., Roanoke, Va.

Sept. 21-22: 57th Fall Meeting, Steel Founders' Society of America. The Homestead, Hot Springs, Va. SFSA, 606 Terminal Tower, Cleveland 13, Ohio.

Sept. 27-30: 3rd Annual National Power Conference: ASME and AIEE, co-sponsors; Hotel Muehlebach, Kansas City, Mo. Fred P. Gilpin, Kansas City Power & Light Co., Box 679, Kansas City 41, Mo.

Sept. 28-Oct. 1: Fall Meeting, American Welding Society. Sheraton-Cadillac Hotel, Detroit, Michigan. AWS, 33 W. 39th St., New York 18, N. Y.

Oct. 22-25: Annual Meeting, American Society of Industrial Designers, Grove Park Inn, Asheville, N. C. ASID, 15 E. 48th St., New York 17, N. Y.

Nov. 16-20: 5th International Automation Exposition & Congress. New York Trade Show Bldg., 500 Eighth Ave., New York, N. Y. Richard Rimbach Assoc., Inc., 845 Ridge Ave., Pittsburgh 12, Pa.

Nov. 30-Dec. 4: 27th Exposition of Chemical Industries. New York Coliseum, New York, N. Y. E. K. Stevens, Pres., International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Warehouse & Service Center—Miss. Pwr.

A new warehouse and service center is underway for **Mississippi Power Co.** in Laurel, Miss.

Occupancy of the $135,000 facility is anticipated late in the summer. It is part of the company's $43,000,000 expansion program.

Gas Processing Plant

Shell Oil Co. has begun plans for its $550,000 Crossett Gas Processing Plant at McCamey, Tex.

The plant will be a compression-refrigeration process, handling a gas capacity of 3 million cu ft per day with a liquid recovery of 12,000 gallons per day.

Laurens Glass Plant

Nearing completion is a new multi-million dollar plant at Henderson, N. C., for the **Laurens Glass Works, Inc.,** Laurens, S. C., producers of over half million glass containers daily. Contract has been let to Daniel Construction Company, Greenville, S. C.

Plans are to open the plant by summer with approximately 175 employees.

The Henderson plant, which will also operate a decorating department, is an addition to the present Laurens operation. The company expects to expand its markets and production in the Carolinas to the point that it will require 500 employees with an annual payroll in excess of $2,000,000, it has been announced.

Glass Container Plant—New Orleans

An ultra-modern, multi-furnace glass container plant will be erected on a 24-acre site on the Inner Harbor Industrial Canal in New Orleans by **Owens-Illinois Glass Company.**

The new plant, 17th for the manufacture of bottles and jars, will be built on land leased for 99 years from the board of commissioners of the Port of New Orleans.

It will occupy approximately 150,000 sq ft with adequate room for future expansion.

INDUSTRY SPEAKS

Few readers would suspect that chicanery and coverture contribute to our fire hazard. But such is the case, according to authorities speaking at the 63rd annual meeting of the National Fire Protection Association.

A LITTLE-KNOWN RACKET is endangering people's lives all over the country. Because of it, the fire extinguisher you might have to grab for in an emergency could be completely useless.

The "gyp" servicing of extinguishers — refilling them with worthless materials or not refilling them at all — was described by C. H. Fredriksen, executive secretary of the United Fire Equipment Service Association.

After a firm of "fast-buck" operators had serviced extinguishers in a leading hotel and large hospital in one city, investigation showed that 92 of the hotel's 100 extinguishers were inoperative, and a like percentage in the hospital were useless.

And this is equipment which has to be ready at all times to deal with an emergency, to put out a fire quickly before it can harm people or property.

To check another suspected service firm, he said, soda-acid extinguishers were charged with an unusual solution — salt water in the acid bottle and lemonade in the tank. After the short-cut operator had inspected and serviced the extinguishers they still contained lemonade.

In another case "servicing" of the largest building in the area consisted of filling the extinguishers with a solution that was years old and highly diluted.

Another type of racketeer is the 'Lone Ranger' or 'bucket boy.' They range through buildings offering to repair and recharge extinguishers. But they use cheap, worthless materials and parts.

Mr. Fredriksen urged that NFPA standards on extinguisher servicing be made the 'bible' in the field, and that extinguisher manufacturers, insurance interests and fire service officials join in stamping out the racket.

GOVERNMENT AND PRIVATE industry were charged with concealing information which would help reduce death-dealing oxygen fires and explosions.

Arthur E. Miller, Director of Research for the Scott Aviation Corporation, declared that much of the work which has been done by independent companies and government bureaus in investigating oxygen fires and explosions has not been publicly reported.

The reason for this reluctance is the fear that published information might be used in litigation against either the company that released the information or against one of its associates.

He declared that military and other governmental departments seem to be equally reluctant to give out their findings on this important subject.

Although oxygen is technically a non-flammable gas it must be handled and treated just as cautiously and with as much respect as an explosive. Oxygen itself will not burn, but it supports and tremendously accelerates combustion with any burnable material.

Mr. Miller said one way in which the hazards associated with oxygen could be significantly reduced would be for all oxygen equipment manufacturers, oxygen producers, the military services and other government bureaus to pool their knowledge and information and make it available to an independent, unbiased group who would evaluate all of the information available and use it either to establish definitely provable facts or as the basis for further investigation.

He believes, however, that the reluctance of industry to publicize its findings, coupled with the interdepartmental rivalry in some of our governmental divisions, make such a program unlikely.

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TIMELY COMMENTS

Material Handling, Planning and Specifying

THE MODERN concept of material handling — its increasing importance — has implemented many changes in the overall industrial picture. Two diverse lines of thought are exercising control of its design and installation:

1. Coordination.
2. Specialization.

Two different types of engineers are involved in planning and selection. Those that make overall plant layout think in generalities — two spots in the plant with a line between, representing material handling. But the M-H specialist sees those "lines between" in terms of rollers, conveyors, fork trucks and cranes.

Neither is independent of the other. As plant plans progress the two types of engineers work together — giving and taking, suggesting and discussing until the plant takes shape and becomes a working entity.

Thus, early recognition of the importance of material handling in the plant design can avoid blunders and save money.

The most difficult element in such planning is looking to the future. No road blocks should be placed against future progress and improvements. Someone has said that today "every plant is obsolete by the time it is built." But planned allowance for improvements and expansion will go far toward letting the new plant grow and thrive.

Automation particularly must be considered, at least for the future if not for the present. And since the elements of automation are not yet well defined, planning for the future is not easy. No one man, not even one plant organization, will have all the needed knowledge.

That is why engineers are relying so heavily on their professional associations, on trade magazines, and various material handling equipment manufacturers.

Not only are the engineers on the purchasing end pooling their information through their societies, but the manufacturers of handling equipment are also striving for a better educational job and better understanding of their products.

Particularly the Material Handling Institute is to be commended for constructive activity and a genuine effort to encourage most intelligent selection and application of equipment. This is an organization of equipment manufacturers with headquarters in Suite 759 at One Gateway Center, Pittsburgh 22, Pa.

As a national trade association MHI offers many services to industry — for example their recent highly successful exhibition of equipment at their Cleveland Show and the technical sessions held in conjunction with it. They also endeavor to answer special requests from industry, telling where specific information may be obtained. The organization is young and services are being expanded. The organization already sponsors an active travel clinic for plant men and such things as a speakers' bureau and a library are being considered.

And most important to SPI editors and their readers — the Institute helped provide many of the excellent articles in the following special Material Handling Section.

This is an **IDEA** section. Study it as a whole — for the overall picture of many handling methods. And then study in detail those articles that match most closely with your requirements. Don't overlook the New Equipment and Catalog Departments where many new elements of handling equipment are described.

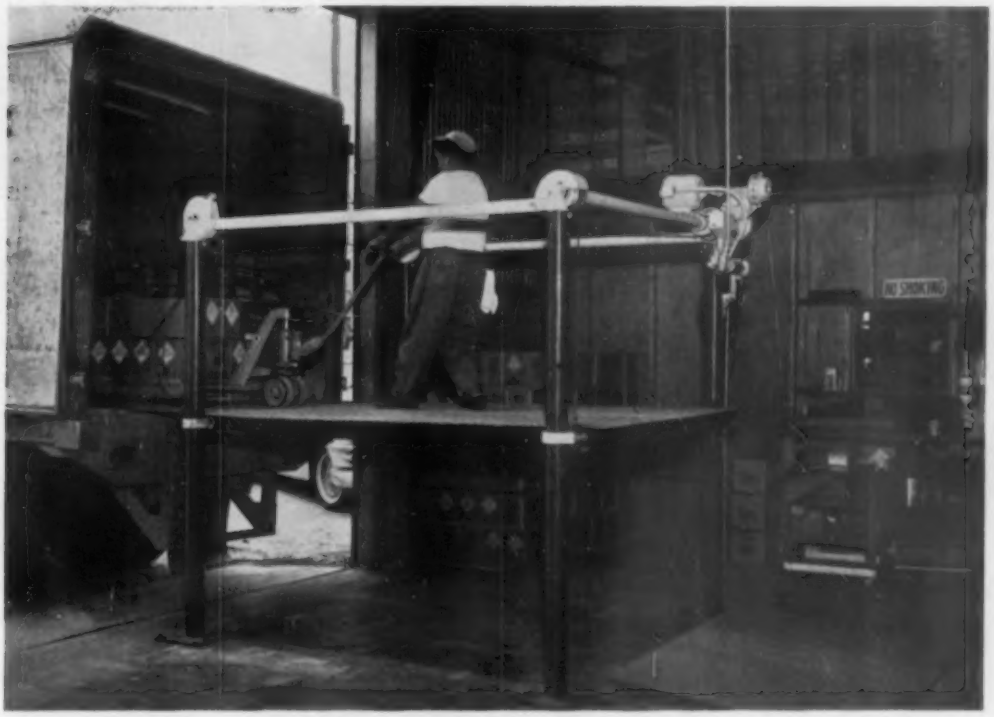


Photo above shows the lift in raised position with the workman rolling a palletized load of batteries off the truck. Also shown is the extra long approach ramp furnished with the installation. This offers a gentle approach to the platform for either fork trucks or hand trucks.

Unloading Labor Cut from 16 Man-Hours to 2 Man-Hours

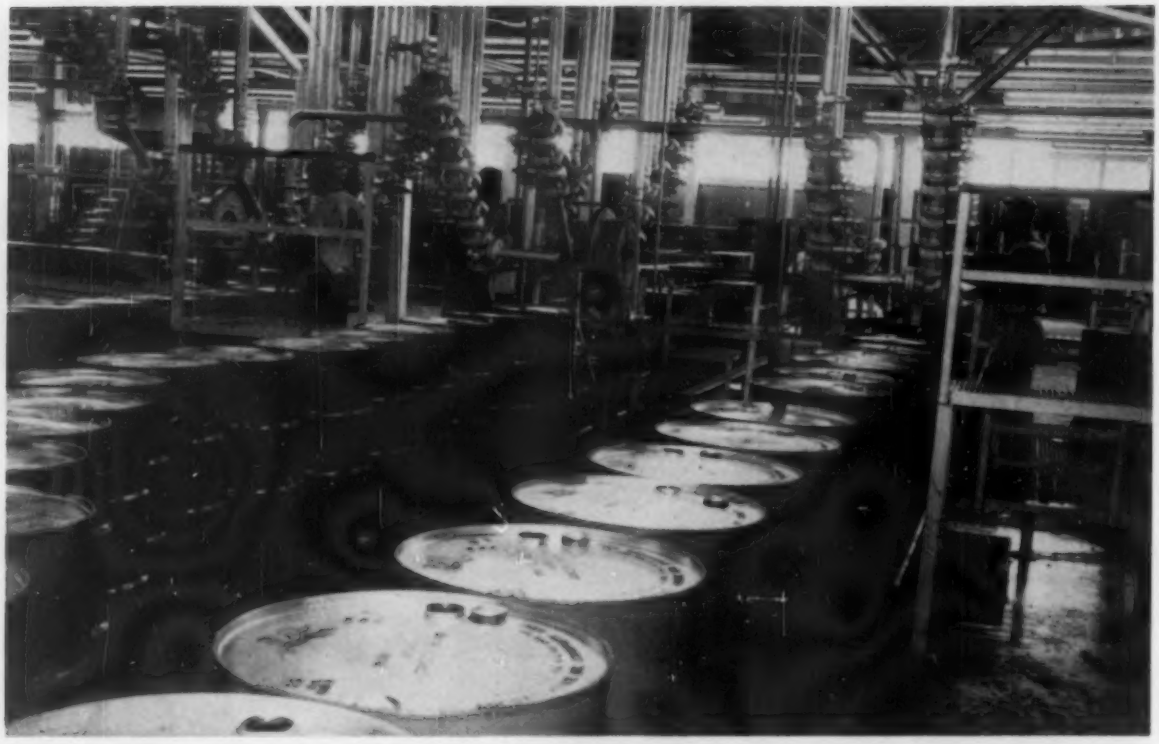
THE RELIABLE Battery Company plant at Houston, Texas, has reduced materially the man-hours and manual effort required in handling truck loads of batteries through the use of an Electro-Loader manufactured by Globe Hoist Company.

A job that formerly took four men four hours, is now done by two men in approximately 45 minutes. The batteries are palletized. Pallet loads are moved off the carrier to the raised platform of the Electro-Loader by means of hand trucks. The Electro-Loader platform is then lowered and the batteries are moved off on the plant floor.

The four-post lift is installed immediately inside the plant door. The base plates of the corner posts are permanently anchored to the plant floor. Power connection to the plant's 220 volt, single phase, 60 cycle line is through the conduit leading downward to the motor.

The Reliable Battery Company has improvised an interesting and practical throw-over bridge between the lift platform and the bed of the carrier. The bridge consists of a section of ⅜" checkered steel plate, similar to the deck of the lift. This steel plate is hinged to the edge of the lift. Attached to the projecting edge of the bridge, at one side, is an eye bolt with a cable running up to a sheave fastened to the corner post, and then downward to the platform edge.

When the lift is in the "down" position, the hinged bridge plate is pulled upward by its cable attachment. As the platform rises, the hinged plate operates much in the manner of a drawbridge. It connects the bed of the carrier with the platform of the lift.



Empty drums at Magnolia Petroleum Co. travel on gravity lines to filling machines which fill them to designated volume and weight and then shut off automatically. After bunging and sealing, drums flow via power conveyors to gravity roller accumulation lines.

Magnolia Petroleum's Equipment at Beaumont Keeps Product Moving

Regardless of Shape and Size

HOW DO YOU HANDLE, in assembly-line fashion, a large number of products in a variety of containers?

That was the problem faced by Magnolia Petroleum Co. at its Beaumont, Texas, refinery in the handling and movement of a variety of containers for lubricating oil products.

Magnolia, an affiliate of Socony Mobil Oil Co., Inc. was in the process of designing a huge modern packaging, warehousing and shipping facility for lubricating oils. Its objective was their efficient blending, filling, packaging, storing and shipping in containers ranging from cans to pails to cartons to drums.

To engineer and build a materials handling system for this giant facility, Magnolia selected Alvey Conveyor Mfg. Co. of St. Louis.

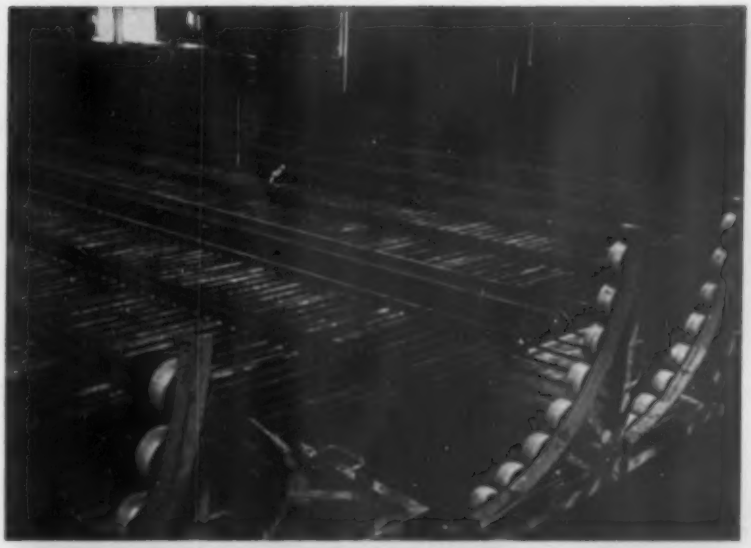
It is quite common in the oil industry for a company to follow the so-called bulk terminal distribution policy whereby large quantities of packaged items are shipped to distribution terminals or warehouses strategically located throughout its selling area.

One of Magnolia's objectives was to eliminate the double handling and duplication of service of its operating and administrative personnel by instituting a direct delivery system. Now the Magnolia refinery, unlike most major refineries, delivers lube oil orders to the sales depot or private customer via truck, rail or water.

The Alvey Conveyor system begins with the receiving of incoming empty 55 gallon, 30 gallon and 120 lb drums and 35 lb pails from freight cars and trucks. These containers flow to stencilling and filling stations and automatically to a battery of gravity roller conveyor holding lines for order accumulation and assembly.

An operator needs only to release the stops to send them at

Wheel deflectors in the foreground transfer drums from channel flight apron conveyor onto off-bearing gravity roller accumulation and order assembly lines.



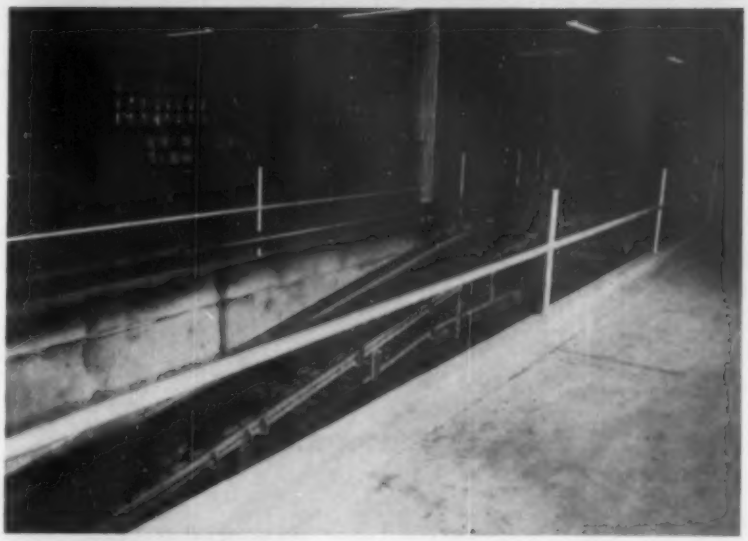
full capacity loading rate to freight cars or trucks.

In like manner, 1 quart and 5 quart oil cans are received in rail cars and motor trucks at the plant packed in re-shipper cases. Unloaded from the carriers to conveyor lines, these cases flow to the can unscrambling equipment. After leaving the empty cans for processing through automatic filling and packing machines, the empty cases proceed via conveyors to synchronize with the arrival of the filled cans at the packing station.

The filled cases then move through sealing operations and are routed either to railway cars or trucks or to a loop of multi-decked conveyors for floor storage in the warehouse. Floor storage is held to the minimum required to assure adequate stock to meet daily needs.

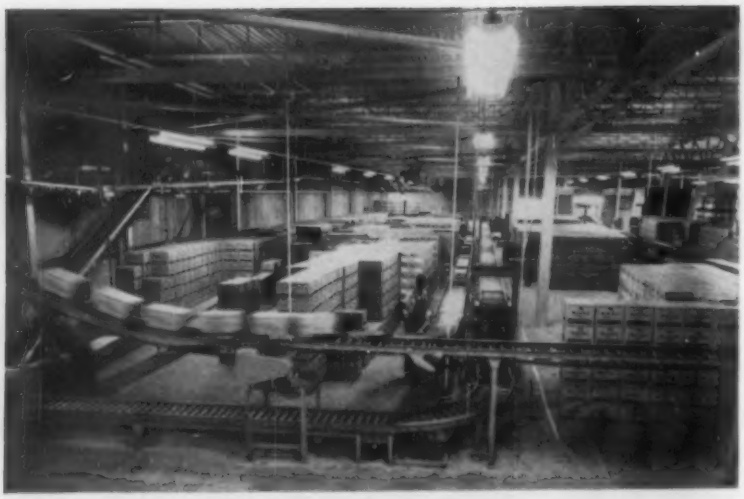
The conveyorized loop permits order assembly enroute through the storage area, then the movement of cases on conveyor lines to shipping, thus minimizing double handling involved in routing to and from floor stock.

So few manual operations are involved in the drum and case



A studded angled apron conveyor, shown in center view, provides steady flow of drums weighing 500 lb, up or down without danger of slide or back slippage on the oily conveyor surface.

Cases of empty cans from freight car travel on their sides to the trunk line. Then with open flaps face down they then travel upside down to the unscrambler, discharge the cans, and then flow upended to the case packer.



Double decked loops of conveyors surround case goods floor storage area at Magnolia Petroleum Co. These conveyors are used to carry cases to the storage area and to route orders picked from floor stock.

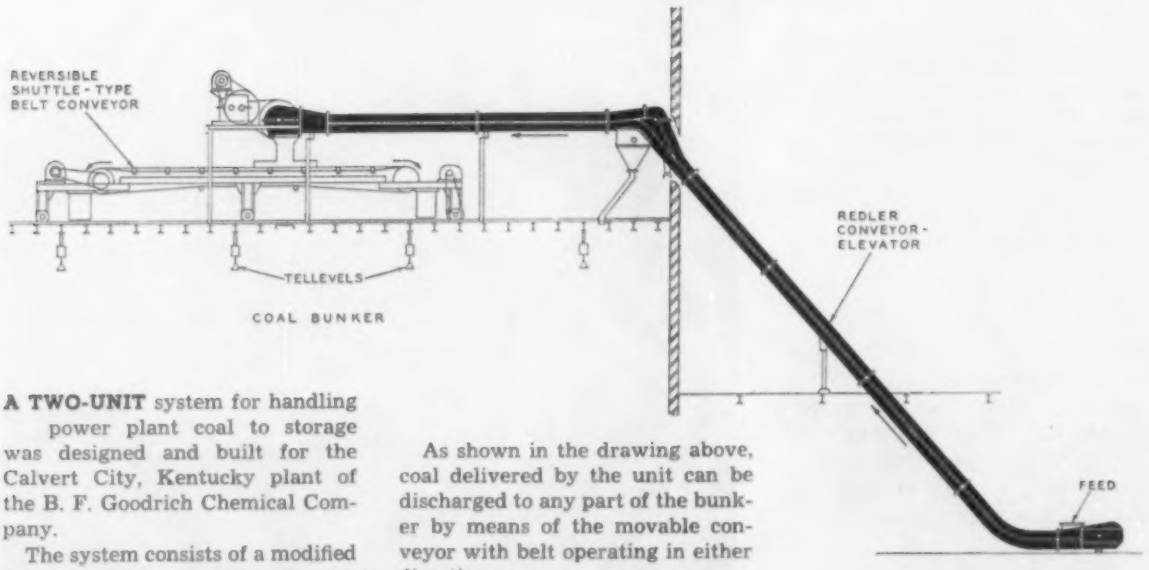
handling systems that the Magnolia facility comes fairly close to being an entirely automated, push button operation.

Tremendous as it is, Magnolia's new Blending and Packaging Plant has still another stage to complete. The facility will be greatly expanded in due time to provide for packaging, warehousing and shipping of additional petroleum products. Magnolia also plans to expand shipping facilities to provide for improved transportation methods made available since the plant was designed and constructed.

There is an adage in the oil business that buildings and equipment are obsolete the day they are installed, so fast does this industry advance.

However, many of the oil experts who toured the Magnolia facility during the days of its formal opening, might well have wondered how much further such a plant can be advanced in efficiency, effective use of equipment and materials handling methods.

Coal Handling Combination



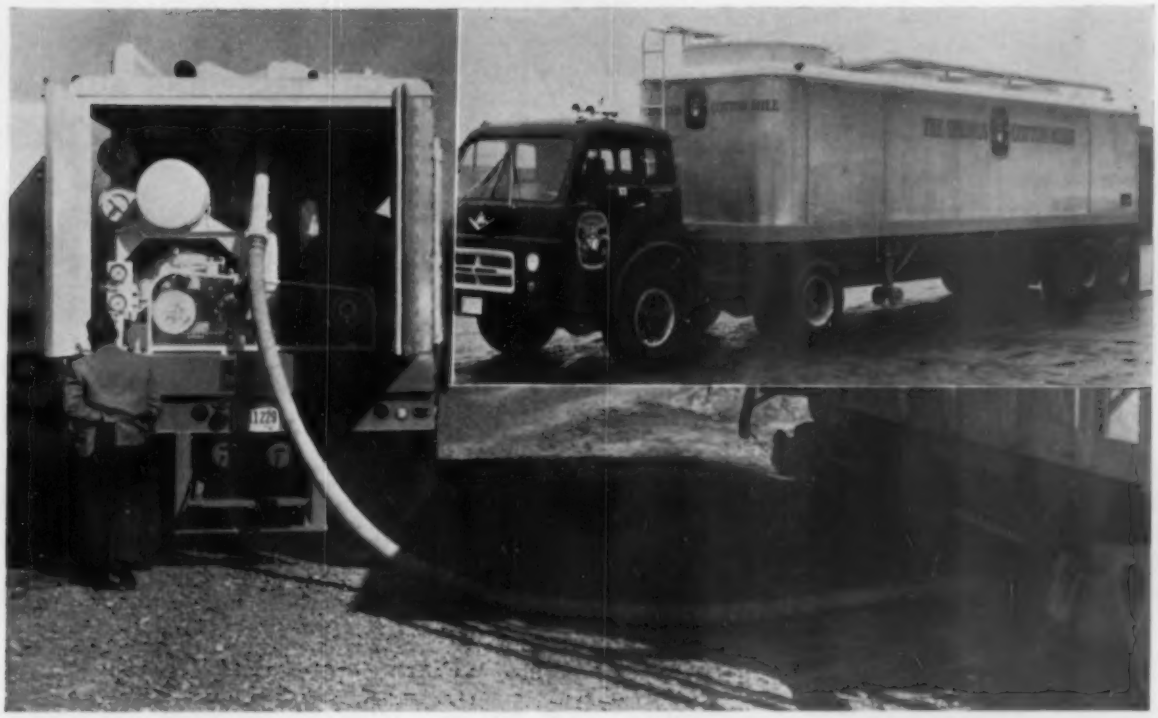
A TWO-UNIT system for handling power plant coal to storage was designed and built for the Calvert City, Kentucky plant of the B. F. Goodrich Chemical Company.

The system consists of a modified Z-type Redler conveyor-elevator for receiving and lifting coal to a central point over a 52 foot long storage bunker and a reversible, shuttle-type belt conveyor for bedding discharged coal evenly into the bunker. Capacity is about 30 tons per hour.

As shown in the drawing above, coal delivered by the unit can be discharged to any part of the bunker by means of the movable conveyor with belt operating in either direction.

To prevent coal from overflowing the bunker at any point, a series of Tellevel bin level control units are mounted at strategic locations along the top of the bunker. When the level of coal rises far enough to tilt the suspended cone of the Tellevel to one side, an enclosed switch in the housing is actuated to stop the conveying system feeding coal to the bunker.

The conveyor and level controls were manufactured by Stephens-Adamson Mfg. Co.



A fleet of 14 hopper cars are painted baby blue and white with a gray undercarriage. Hoppers are lined and sealed. Trucks carrying pneumatic equipment unload the freight cars by attaching transfer pipe to outlet at bottom of hopper RR cars.

Springs Cotton Mills . . . . . Lancaster, S C.

Starch Handling - - Safe and Fast

FOURTEEN new covered hopper freight cars of special design are used to haul bulk starch from the corn belt of Iowa to the Springs Cotton Mills at Lancaster, S. C. The mills have specially constructed trailer trucks which are loaded from the hopper cars by special equipment, driven to the various plants as needed, and unloaded into starch storage facilities at the mills.

Both the new freight cars and the trailer trucks were built to specifications and designs worked out by E. L. Scruggs, Charles F. Marshall, and Cleve Miller of the Springs engineering department, in cooperation with the Fuller Company and the Link-Belt Company.

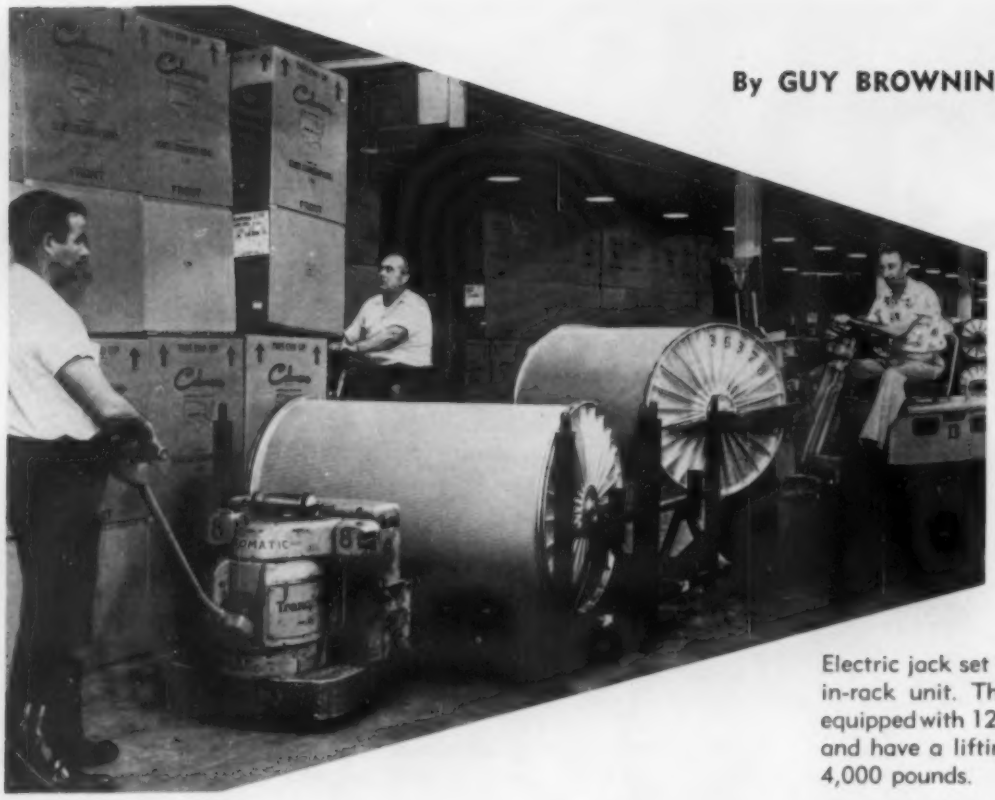
Starting in Iowa, starch in pellet form is loaded into the freight cars which are equipped with lined and sealed hoppers. Upon arrival in Lancaster or at any plant terminal, the railway cars are unloaded pneumatically by trailer trucks carrying pneumatic equipment for the job. The trailer trucks haul the starch to steel hopper bins installed at each of the eight plants of the Springs Cotton Mills. There it is unloaded for storage and use as needed. The bins at the eight plants have a combined storage capacity of 10 carloads of starch.

Each trailer truck holds about one-third of a railway carload, and about 40-45 minutes are required to load one truck. A truck load amounts to approximately 35,000 pounds, and only an hour and a half to an hour and forty-five minutes are required to unload an entire railway carload.

No system of handling starch automatically had been worked out previously which could meet the approval of safety and insurance requirements because of the explosive characteristics of starch dust.

The new system replaces the bagged starch formerly stored in warehouses. Also eliminated is the need for unsightly and dangerous silos used for starch storage.

By GUY BROWNING AUTHUR



Electric jack set to lift a beam-in-rack unit. These jacks are equipped with 12-volt batteries, and have a lifting capacity of 4,000 pounds.

Handling System at Celanese Corporation . . . Rock Hill, S. C.

Wide Variety of Work for Fork Trucks

BATTERY-POWERED lift trucks are used in many plants on only one type of service. At the Celriver plant of Celanese Corporation of America, at Rock Hill, South Carolina they are used for a wide diversity of work. All of it is on the heavy side, requiring sturdy, dependable service.

This is one of many Celanese establishments in this country and abroad, devoted to the manufacture of man-made textile fiber and yarn. It is one of the company's largest installations. The products are acetate and Arnel triacetate filament yarn and staple fiber.

Battery Powered Trucks

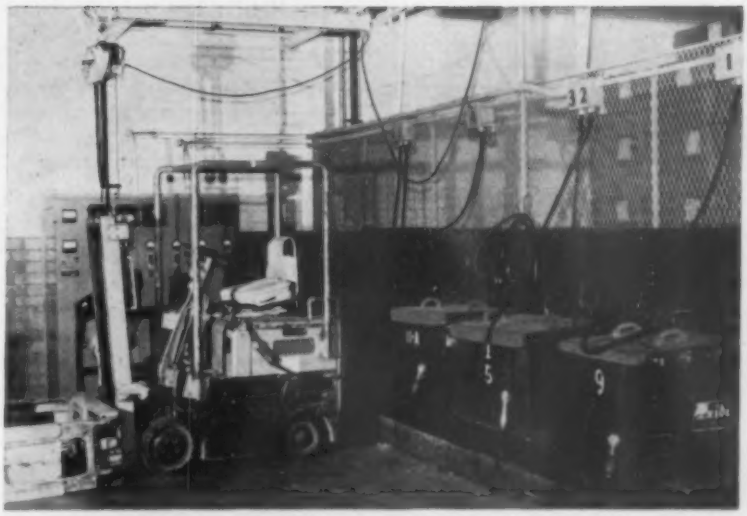
Battery-powered fork lift trucks were put into regular service when the plant began operating. They were chosen for a number of reasons, including long life and dependability — to be insured by a thorough system of maintenance.

Demands on these trucks are tough. They go far beyond the shuttle service of small lift trucks moving lightweight cartons. One heavy-duty job is transporting and stacking rolls of wood pulp weighing up to 500 pounds. More than one roll can be handled at a time, and the total load for a trip may be 1,500 pounds. The rolls are picked up from a standing position, and often stacked six high. It is done with a 3,000 pound capacity Elwell-Parker truck.

The special clamps act like the jaws of a vise which are opened, closed, and rotated by power take-offs. Truck travel may be less than 100 feet, but the lifting, revolving and stacking at the ends of the run make the service very demanding. Unloading from box cars is said to be the most severe requirement. This calls for moving in and out of the cars, and short, quick turns.

To make time on the short runs the operations at the ends must be performed with the utmost speed, and the operator must get instant response from his power for quick turn-arounds.

In another department, yarn and staple, the trucks do various kinds of work with special attachments. A short-haul transfer is required for beams, which are spools of yarn



Truck parked at its recharging station. Some batteries are charged only at the end of a shift, while others may get a booster charge between shifts.

six feet long, on steel axles, and when filled may weigh 1,800 pounds. These beams have to be picked up and transported to beam racks, on which they are moved for shipment or to other parts of the plant.

For this work the trucks are equipped with beam rack arms notched on the ends to engage the steel axles of the beams. These arms are replaced by curved clamps for transporting and stacking bales of staple. The clamps act like the pulp-roll clamps, except that they do not encircle a roll, but are curved to grip a rounded surface. They are not required to revolve. Three bales are picked up at once, and they are stacked two truck loads (six) high.

With both beam racks and clamps removed the trucks do normal fork lift truck service about the department, handling heavy cartons of material and miscellaneous loads. Eleven of these trucks are kept busy in the department.

For transporting yarn on beams, or beam-in-rack units, there are two battery-powered jacks, using 12-volt batteries, with a lifting capacity of 4,000 pounds.

The average run for trucks in this department is longer, and may be 50 to 100 yards. The loads may be averaged at about 1,000 pounds. The saving in quick turn-arounds does not make as much impression on the total trip-time in these longer runs as it does on short-run shuttle work, but the travel itself is fully as fast as with any other type of truck.

As proved elsewhere, the effectiveness of battery-powered fork lift trucks is wrapped up in maintenance. Unless the trucks get well organized preventive maintenance, and beyond that, repairs and complete overhauls when needed, their value cannot be realized. The service-return on the investment comes in thorough going upkeep.

Maintenance

At Celriver this maintenance is painstaking and thorough. At night each truck is parked at its station. The operator or attendant makes a casual check over the entire truck to spot any need for adjustments or minor repairs. He spot-checks cells

Trucks are fitted with special clamps for handling bales (left) and rolls (right).

in the battery, and hooks up the recharger. The automatic cut-off stops the recharging when it reaches full load, and the truck is ready for work.

When necessary the battery is lifted out of the truck with a chain hoist for extra service or replacement.

The batteries in the beam and staple department, where the demand is most severe, give full service through a working shift before they need to be recharged, and the average life of a battery is about seven years. The trucks handling wood pulp rolls, work that is also severe, are kept at peak efficiency by giving the batteries a booster charge during the noon hour, and sometimes another between shifts.

Drag Scraper for Cement Mill . . . . . Houston, Texas

THE WET PROCESS cement mill of the Ideal Cement Company in Houston, Texas, uses a 3-yd drag scraper to reclaim clay from their soaking pit to the wash mill. The Sauerman machine is similar to a 2-yd drag scraper unit working in the clay soaking pit of Ideal's Baton Rouge plant.

Oyster shells and clay for cement processing are delivered to Houston by barge and unloaded by crane equipment. The clay is unloaded directly into the soaking pit. It is reclaimed by the 3-yd drag scraper into the wash mill and mixed thoroughly to obtain a moisture content of approximately 60%.

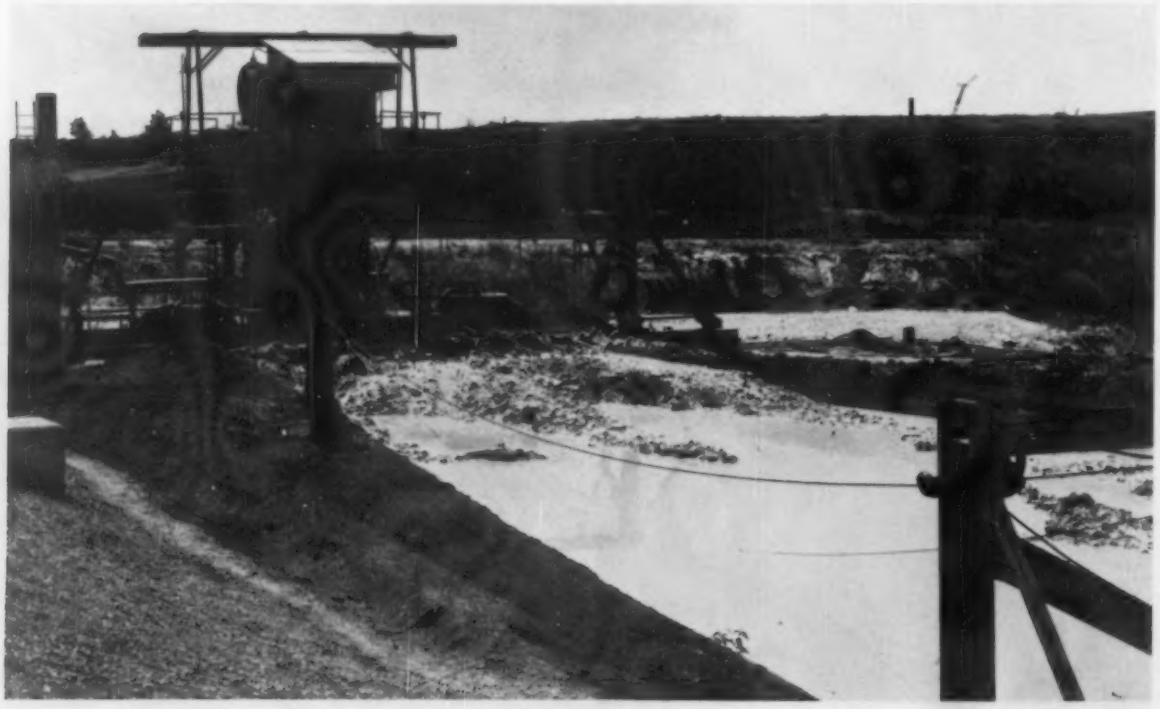
The clay is then pumped to a clay slip tank which is actually a sort of surge tank. From here, it is properly proportioned into the raw mills. When both Houston plants are in full operation, approximately 1200 cubic yards of clay are required in a 24 hour period.

Recovery from all sections of the concrete soaking pit is handled by laterally shifting the trolley and block assemblies that travel on monorail tracks spanning the pit at either end.

Each trolley carries a shrouded Durolite block equipped with swivel hook. The load cable is reeved through the block attached to the head end trolley. Shifting of this trolley block is handled by the third drum of the electrically-driven variable speed controlled drag scraper hoist. The tail block carries the backhaul cable and is shifted by a motorized single drum winch located below the tail monorail.

Both the hoist and winch are remotely operated by electro-pneumatic controls from an elevated operator's station at the head end of the pit. The new plant facilities were designed and engineered under the general supervision of George Wiley, Ideal's Chief Engineer. Operations at the 8,500 barrels per day Houston plant are supervised by J. L. Conerly, Plant Manager and Frank Chambless, Assistant Plant Manager.

View showing hoist house, wash mill and clay soaking pit.



One Man Can Charge 80,000 Brick Per Shift . . . . . Owensboro, Ky.

Lift Trucks Cut Handling Costs

THERE WAS A TIME when charging a kiln at Owensboro Brick and Tile Co., Inc., in Owensboro, Kentucky, was quite a chore. A crew of men would labor three days to hand-stack dried brick in the kiln.

Not so any more, however. Today, one man and a Hyster 20 lift truck can charge a kiln with 80,000 bricks in an eight-hour shift. The brick company has four Hyster 20 lift trucks, three equipped with Side-Shift carriages and Bickerstaff automatic brick forks, and the fourth with conventional load arms.

The special brick forks are manufactured by Bickerstaff, Inc., of Columbus, Georgia, for palletless handling of brick.

Discharging a kiln, too, is faster and less expensive. After the bricks are fired and cooled, they are taken out of the kiln by two lift trucks in an average period of 4½ hours. It would take five or six men three days to discharge a kiln by hand.

Mechanization has doubled production. Savings on handling costs alone paid for the lift trucks in three to four months.

The brick is formed and stacked on dryer cars to be heat-dried in drying tunnels for 12 hours. Emerging from the tunnel, bricks are removed from the cars and hand-stacked into "cubes" for lift truck handling. Lift trucks equipped with the Bickerstaff brick forks carry the cubes into the kilns, stacking them tight for burning.

After firing and cooling, the cubes are hauled by lift trucks to a covered area where they are re-stacked by hand into tight cubes, steel strapped for fork truck handling, and placed in yard storage.

Three Hundred Tons Per Hour

THE THOMAS H. ALLEN generating station of Memphis, Tennessee started operation late in 1958. A general description of the plant appeared in the June, 1959 issue of *Southern Power and Industry*.

The station, designed and constructed by the engineering firm of Burns and Roe, Inc., consists initially of three turbine-generator units, each with a nominal rating of 250,000 kw. The design permits expansion to double this capacity by 1965. Steam is provided by three, 2 million lb/hr boilers. Seven cyclone furnaces serving each unit are in turn fed by one of the nation's largest coal handling systems.

The coal handling system, engineered and constructed by Link-Belt Company, conveys the coal:

(1) From barge unloading tower to transfer tower, to crusher house, to bunkers.

(2) From barge unloading tower to transfer tower, to outdoor storage.

(3) From outdoor storage to transfer tower to crusher house to bunkers.

The boilers burn 300 tons of ¼ by 0-in. cyclone coal per hour at rated generator capacity. Storage area is provided for 90 days' operation or 9,000 carloads of coal. At present, all coal is delivered by barges to the plant site.

At the barge unloading tower, twin 12-ton capacity buckets can empty two 1,500-ton coal barges simultaneously, dumping the coal into unloading hoppers. Four 60-in. wide belt feeders beneath the barge unloading hoppers deliver coal to two, 48-in. wide belt conveyors. These conveyors, operating at 450 fpm, each deliver 1,100 tph to the transfer tower where it can be directed either to outside storage or to coal bunkers in the plant.

The top floor of the transfer tower contains the master control panel for the entire coal handling system. From this panel, one man can control the entire system from barge to stockpile or bunkers. A flow diagram on the panel shows at a glance the portions of the conveyor system that are in operation.

Coal that is routed from the transfer house directly to the power plant flows through a system of chutes to two, 48-in. conveyors which carry the coal to the crusher building. These conveyors each have a capacity of 1,100 tph at 485 fpm. Two completely enclosed, self-cleaning magnetic separators remove tramp iron at the head ends of these belts.

Two Syntron twin electric vibratory feeders provide an even flow of coal from surge hoppers to two reversible hammermill crushers. These crushers, driven by 1,250-hp motors, each produced 550 tph of minus ¼ in. coal for cyclone furnace firing.

Crushed coal is conveyed from the crusher building to the top of the power station by two inclined 48-in. belt conveyors which discharge through chutes to two bunker conveyors. Each bunker conveyor is equipped with an automatic reversing belt tripper for distributing coal evenly to the bunkers.

Discharge chutes are arranged with flop gates to direct coal flow back onto the belt when the tripper is moving from one bunker to another. A spring-loaded, rubber-edged belt scraper cleans the carrying side of belt after the coal is discharged over the pulleys.

Coal storage bunkers are of divided construction. This necessitated the design of unique bunker seal openings that permit tripper entry and exit without manual attention as the tripper moves from one bunker to another. These bunker seals assure dust-tight closures and keep dusting in this area to a minimum.

From the bunkers coal is fed into seven cyclone burners, three on one side and four on the other, which are opposed fired. Cyclone burning removes approximately 85 per cent of the ash as slag. The 15 per cent of entrained ash in the flue gas passes through electrostatic precipitators, which pass only 1/10 lb of ash per 1,000 lb of flue gas discharge. At least 98.8 per cent of the original ash is removed either as slag or in the precipitators.

From the transfer tower, coal can also be directed from barge unloading hoppers directly to outside storage. A stationary stacker discharges to a rail-mounted, 60-ft radius stacker conveyor that can be pivoted in a 90-degree arc. Both stackers have 60-in. wide belts, providing a capacity of 2,200 tph.

The movable stacker conveyor can pile coal to 30 ft above grade elevation. A telescopic chute at the discharge end reduces dusting. This chute, controlled by limit switches, rises 2 ft at a time, making it possible to maintain a maximum of 2 ft between the bottom of chute and the coal pile.

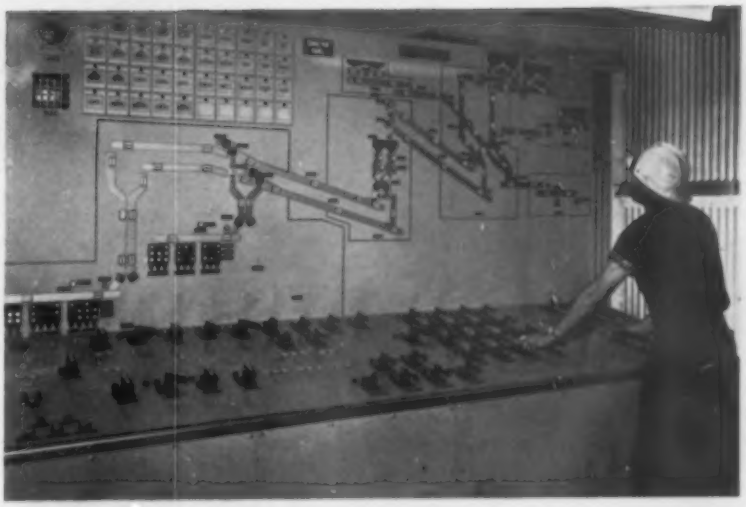
The storage reclaim system has two separate systems of hoppers and feeders. Coal is bulldozed to the reclaim hopper grates and fed by two 60-in. wide belt feeders located beneath each reclaim station onto two separate systems of 48-in. wide belt conveyors. Each of these systems is capable of handling 1,100 tph to the main transfer tower.

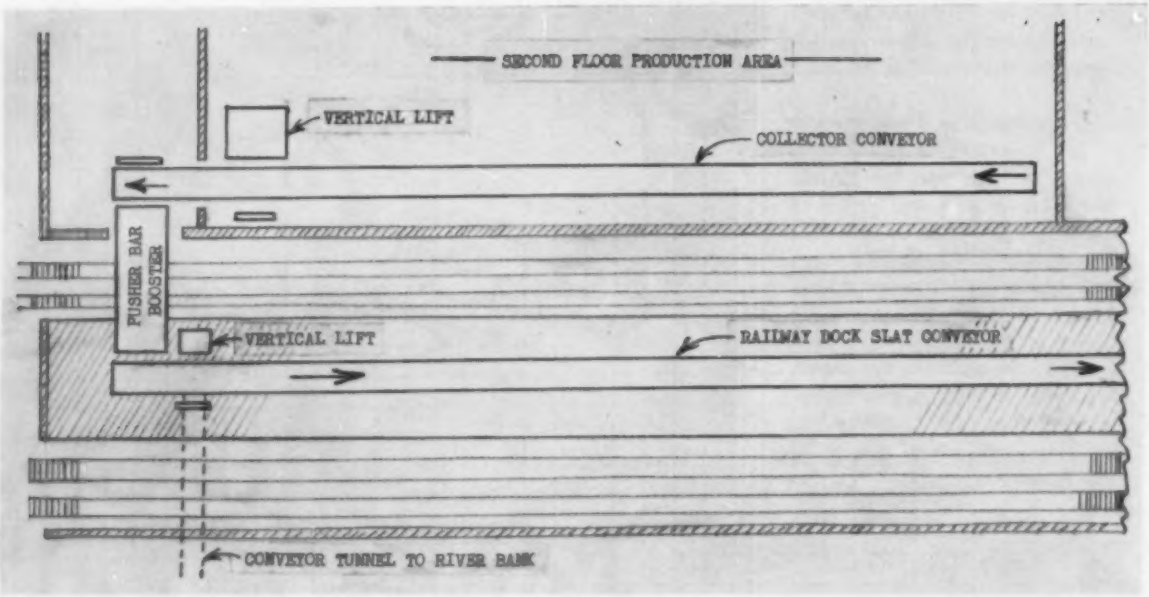
From the transfer tower coal is distributed through chutes to the two 48-in. belts that convey it to the crusher building. The coal is crushed to minus ¼ in. and conveyed to bunkers.

One man controls entire coal handling system from control panel in the transfer tower.

Coal is unloaded from barges at the tower at far right, conveyed to the transfer tower, center, and delivered either to the storage pile or crusher house and bunkers. Two reclaim belts connect the storage yard with the transfer tower.

Coal is carried from the transfer tower to the crusher building on the two 48 in. wide inclined conveyors shown in the lower photograph.





Handling Rolls of Newsprint . . . . . Bowaters Tennessee Plant

Integrated { Truck / Rail / Barge } Shipments

By PETER B. PERRAULT
Systems Engineer
Lamson Corporation

THE PAPER ROLL handling system at Bowaters Southern Corporation's huge mill in Calhoun, Tennessee, illustrates an interesting application of standard package conveyor principles to the handling of heavy and bulky loads.

The problem to be solved was the transportation of rolls of newsprint from a second story production area to a first floor storage area and to the truck, railway car, and barge-loading docks. These rolls weigh up to 2500 lb and are as much as 72 inches long by 45 inches in diameter.

It was desirable to have a conveyor located along one wall of the second floor to serve as a collector and transportation conveyor to bring the rolls to a vertical lift to lower them to the first floor storage area and truckloading facility. Also, a means was needed for delivering them to a first floor "island" railway dock with spur tracks on both sides.

A conveyor running the length of the carloading dock must then transport the rolls to a location opposite the desired cars. It was also necessary to provide a means of diverting some of the rolls from the car-loading dock to a barge-loading facility on a nearby river bank.

Conventionally, these paper rolls would be handled on slat conveyors, with turntables for 90° transfers in the horizontal plane and reciprocating lifts for vertical movement. Such an installation would have been very expensive, in both initial cost and maintenance in this case, and its capacity per minute would be quite low.

Belt Conveyor

An analysis of the problem revealed that a belt conveyor, if it could be used, would be initially cheaper and simpler to maintain than a slat conveyor. It was decided, therefore, to make the collector conveyor in the production area a belt.

This conveyor was set into the floor-level so loads might be manually rolled onto it. The load-sup-

porting idlers under the belt are ordinary flat-faced rolls and the belt is not troughed. Very low, rounded guards on each side of the belt are sufficient to keep the loads from rolling off and yet do not interfere with manual loading.

Vertical Lift

The vertical lift which transports the paper rolls to the first floor storage area is located beside the collector belt near its head end. When rolls are to be sent to this destination a switch is thrown, setting up a circuit through a photo-electric relay which operates a pneumatic kicker at the proper instant to roll a load into the lift car. The car automatically delivers its load to the first floor and automatically returns to the second floor.

Discharge on the first floor is accomplished by a fixed pedestal which tilts the pivoted car bed at the bottom of car travel, allowing the load to roll out by gravity. A pitched ramp on the first floor carries the roll to a point clear of the lift, where it can be picked up and transported into storage or to the truck dock by a clamp-equipped fork truck.

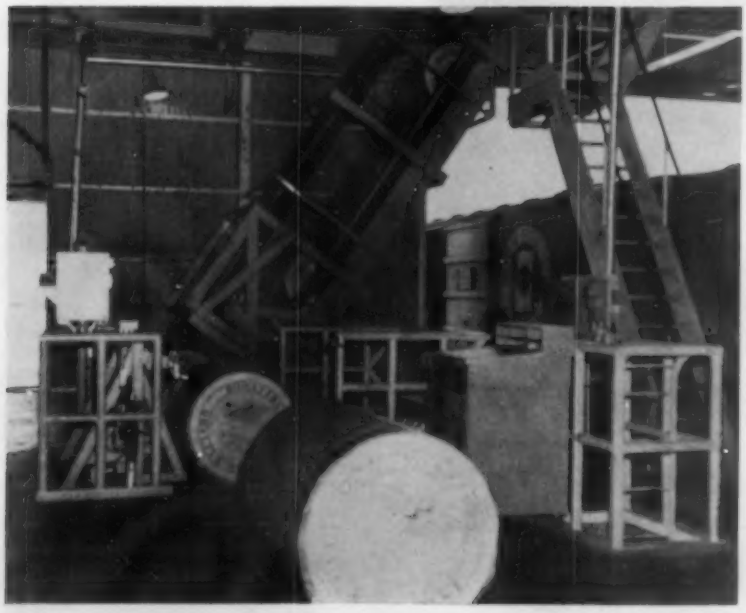
An interesting feature of this vertical lift is a powered turntable built into the car bed. Although the paper rolls are wrapped, there is some tendency for the outer turns to unwind if they are rolled for any distance in the wrong direction. Therefore, they are turned 180° during their descent, so that their rotation when they roll out of the lift is the same as when they are rolled onto the collector conveyor.

When paper rolls are to be sent to the carloading dock, a selector switch is set to allow them to bypass the lift and travel to the end of the collector belt.

Originally it was planned to transfer the load at this point to a wide slat conveyor which would carry it out over the railroad tracks to a vertical lift on the carloading dock. Such an installation would have been quite limited in capacity, inaccessible for maintenance, and rather complicated mechanically and electrically. In addition, avoiding an automatic transfer from a horizontal to a descending conveyor in such an awkard location was desirable.

Pusher-Bar Booster

For these reasons, it was decided to adapt the pusher-bar booster principle to paper roll handling. The pusher-bar booster, as normally used in package conveyor



PUSHER-BAR BOOSTER

UPPER — View toward loading end of pusher-bar booster showing paper rolls enroute from second floor to first floor shipping dock. Railroad tracks are directly underneath this part of the conveyor.

LOWER — Pusher-bar booster discharges rolls of newsprint onto slat conveyor in floor of shipping dock. In the left foreground may be seen the pneumatic kicker which diverts loads onto a lift for conveying through a tunnel to the barge-loading facility.

applications, consists of two endless chains, one on each side of a chute or roller bed upon which the packages travel. These chains are driven by sprockets keyed to a single shaft, and they are connected at regular intervals by rods or bars, which act to push the loads over the bed of the conveyor. Such a conveyor is capable of transporting loads up or down very steep inclines — sometimes even vertically.

Although it is a continuously-running mechanism, a pusher-bar booster must be fed intermittently to avoid interference between the loads and the pusher-bars. To accomplish this, Bowaters Southern installed a short metering belt at the head of the collector belt. This belt automatically positions each load in turn in front of a pneumatic kicker and then stops. At the proper time, the kicker automatically inserts the load between two pusher-bars and then retracts. The metering belt starts again and is ready to position the next roll.

Photoelectric protection is provided to prevent the collector belt conveyor from feeding a second load onto the metering belt while the latter is stopped. In practice, the collector conveyor is seldom stopped for this reason, because the paper rolls are normally loaded at such intervals on the collector conveyor that this belt will not have to stop during the short time that the metering belt is stopped.

The pusher-bar booster — perhaps the world's largest — carries the paper rolls approximately forty feet horizontally and then lowers them some eighteen feet on a 60° declined section to the level of the railroad dock. Actually, the "horizontal" portion of the booster is pitched slightly so that each load rolls ahead as it is received, contacting the bar ahead of it rather than being pushed by the following bar. This prevents the severe impact that would occur if the paper roll were suddenly to roll ahead when starting down the 60° decline, after having been pushed by the following bar during its horizontal travel.

The pusher-bars are heavy duty conveyor rolls fitted with six rubber tires so that they may rotate while in contact with the rolling loads.

When they reach the railroad dock, the paper rolls are released from the booster onto a slightly-troughed slat conveyor grouted into the floor of the dock. This slat conveyor runs very slowly and is of such rugged construction as to permit fork truck traffic across it at any point along the dock. This slat conveyor is unloaded manually near the proper cars and the rolls are stacked in the cars by clamp-equipped fork trucks.

Barge Loading

Increasingly, Bowaters Southern is taking advantage of its location on the Tennessee River to make shipments by barge to its Midwestern and Southern customers via the Mississippi River and its tributaries. By setting certain switches, the shift supervisor can cause paper rolls to be automatically transferred from the slat conveyor into a vertical lift which lowers them into a tunnel, where a belt conveyor carries them under the tracks to the river bank.

The barge loading dock consists of a covered structure on piles in the river, supporting a bridge crane and the end of the tunnel conveyor. Barges to be loaded are towed into this structure and their hatches opened. The bridge crane picks the rolls up singly with a U-hook sling and lowers them into the barges.

This Bowaters Southern material handling system provides a very fine example of a modern, integrated facility. It was designed to handle the high output of the most advanced production equipment, yet to provide the flexibility to take advantage of the most economical shipping method, regardless of changes in marketing areas and freight rates.

As the mill came into full production and it became evident that a major portion of the shipments would be by rail or barge, a second pusher-bar booster was added to supplement the one feeding the railroad dock. Since this possibility had been considered from the first, very little reconstruction of existing conveyors were required.

SPECIAL ATTACHMENT FOR SPECIAL JOB

THIS NARROW aisle Raymond electric truck is equipped with a hydraulically controlled push-pull device to insert and remove heavy dies at the new Westinghouse Electric Corporation Transformer Plant in Athens, Georgia.

Longer Life for Conveyor Spouts

SPECIAL alloy steel has solved an expensive maintenance problem involving spouts at a large Delaware feed mill.

The spouts, some of which are as long as 48 feet, carry soy beans through the various processing stages at the Townsends, Inc., plant at Millsboro, Del.

The soy beans are processed to remove the oil and for meal for poultry feed. They are quite abrasive. Adding to the wear is the fact that the beans are hot when being carried from the dryer back to the storage silos.

Jack Wessel, plant maintenance superintendent, reported that when the eight-inch diameter spouts were made from carbon steel, they had to be replaced every few months.

He began using spouts made from ¼-inch thick Jalloy-280 (Brinell range 260/300) sheets, a special alloy steel made by Jones & Laughlin Steel Corporation. Jalloy is designed for applications where resistance to severe abrasion and impact are required and where maximum service life is desired at low cost.

The spouts made from Jalloy last from eight to ten times as long as those made from carbon steel. The plates are formed into tubes and the ends butted together and welded. Mr. Wessel said the Jalloy had good weldability and the spouts were formed without difficulty.

Maintenance costs, including important savings in man-hours, resulted from the use of Jalloy. Installation of the spouts normally takes four men a total of two days.

The Townsend plant handles from 1½ to 2 million

bushels of soy beans a year, all of which must pass at least twice through the spouts in normal processing.

Mr. Wessell said the spouts were a constant problem and they had to watch them carefully because the slightest hole would mean the spillage of a large quantity of beans in a short time.

The Jalloy plates were purchased from the Eastern Shore Steel Company, Salisbury, Md., an affiliate of Wm. G. Wetherall Inc., Baltimore, Md.

Lightweight Pallet Truck

THE SOUTHERN Screw Company, Statesville, North Carolina, required a lightweight hand pallet lift truck to be used in storage and shipping areas for transporting cartoned loads of screws strapped onto wooden pallets ready for shipment.

To fill this need, the company purchased a Barrett Model HX Foot Hydraulic Lift Truck which received immediate acceptance among the men who move the heavy pallet loads of screw products. Lightweight and short turning radius make the HX truck extremely maneuverable, ideal for use in narrow or cramped areas.

The foot-operated lift treadle is

mounted so that it turns with the pull handle, allowing lift from any angle. Foot release treadles are located on each side for convenience of the operator. "Flying Saucer" pallet entry discs give extra ease of entry into double-faced pallets. The hydraulic system has a built-in overload valve which functions automatically to protect the truck from lifting beyond its capacity.

At Southern Screw Company, the HX truck has proven its value by helping to speed up handling of cartoned screw products to the shipping dock and loading them onto carriers.

Good Fuel Cuts Truck Maintenance

SINCE Central Motor Lines of Charlotte, N. C., began operating its own fleet, and operating it from the first within the confines of a modern preventive maintenance program, tangible advantages have accrued to the carrier.

Poor uniformity of fuel quality shows up in P.M. inspections in the form of deposits in filters, tanks and injectors.

In the great majority of fuel checks in Central's P.M. program on tractors where the supply of their regular diesel fuel is maintained, valves turn out to be clean, oil-control rings show negligible plugging, and ring-sticking averages out to a minimum level.

The fuel which Central is using in its 154 tractors is a premium grade of diesel fuel specifically formulated for diesel engines in heavy duty service by Gulf Oil Corporation. This fuel, offers several advantages, according to the supplier. It will not separate in storage; it burns clean and therefore does not plug filtering or injecting equipment readily.

Faster Handling Saves $1,000 Per Month

INCREASE in operating capacity of more than 50 per cent through installation of economical conveying equipment is reported by Land O'Sun Dairies, Inc., of Miami Beach, Fla.

The old method of handling cases and cans was by hand truck. The cans were transported by hand truck from Point U to the storage area or to Point W for loading retail trucks. The bottles were cased at Point R and moved by hand truck to Point W for retail truck loading, or to Point Z where two men had to lift the cases 60 inches to a third man in the vans for transporting to their distribution stations. Paper containers of milk were also moved by hand from Point V, where paper container filling machines are located, to either Point W or Point Z.

The new system works as follows:

(1) Empty cases are conveyed from Point T to Point R, where the operator stops the cases with a knee-operated stop and loads cases, which are then conveyed to Point W for retail trucks. If the out-of-town hauling vans are to be loaded, the hinged gravity sections at Point W are put in place and cases conveyed down at Point X to the underground section to Point Y, where they incline to an elevation of 60 inches to Point Z for loading vans (this operation saved four men).

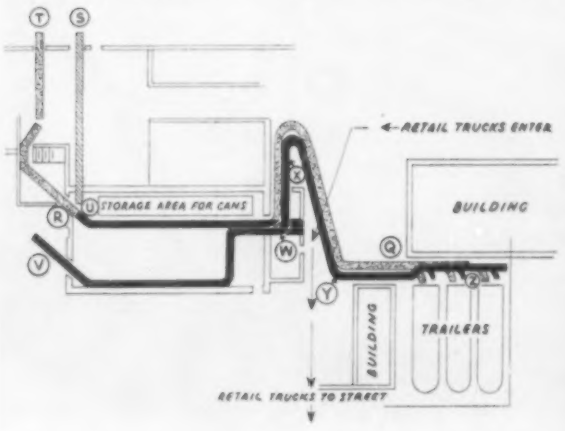
(2) The milk cans are conveyed from Point S to Point U, where they are conveyed to the storage area, or to Point W, for retail truck loading.

(3) At Point V the paper containers are filled, sealed and packed in cartons, and conveyed to Point W for retail truck loading or through the underground system to Point Z for loading vans for distribution stations.

Application of this system has saved Land O'Sun over $1,000 monthly and paid for cost of the conveyor installation in less than a year's time.

The conveyors were designed and sold by Island Equipment Corp.

The diagram shows movement of materials. Photograph shows the inclined elevator at Point Z.



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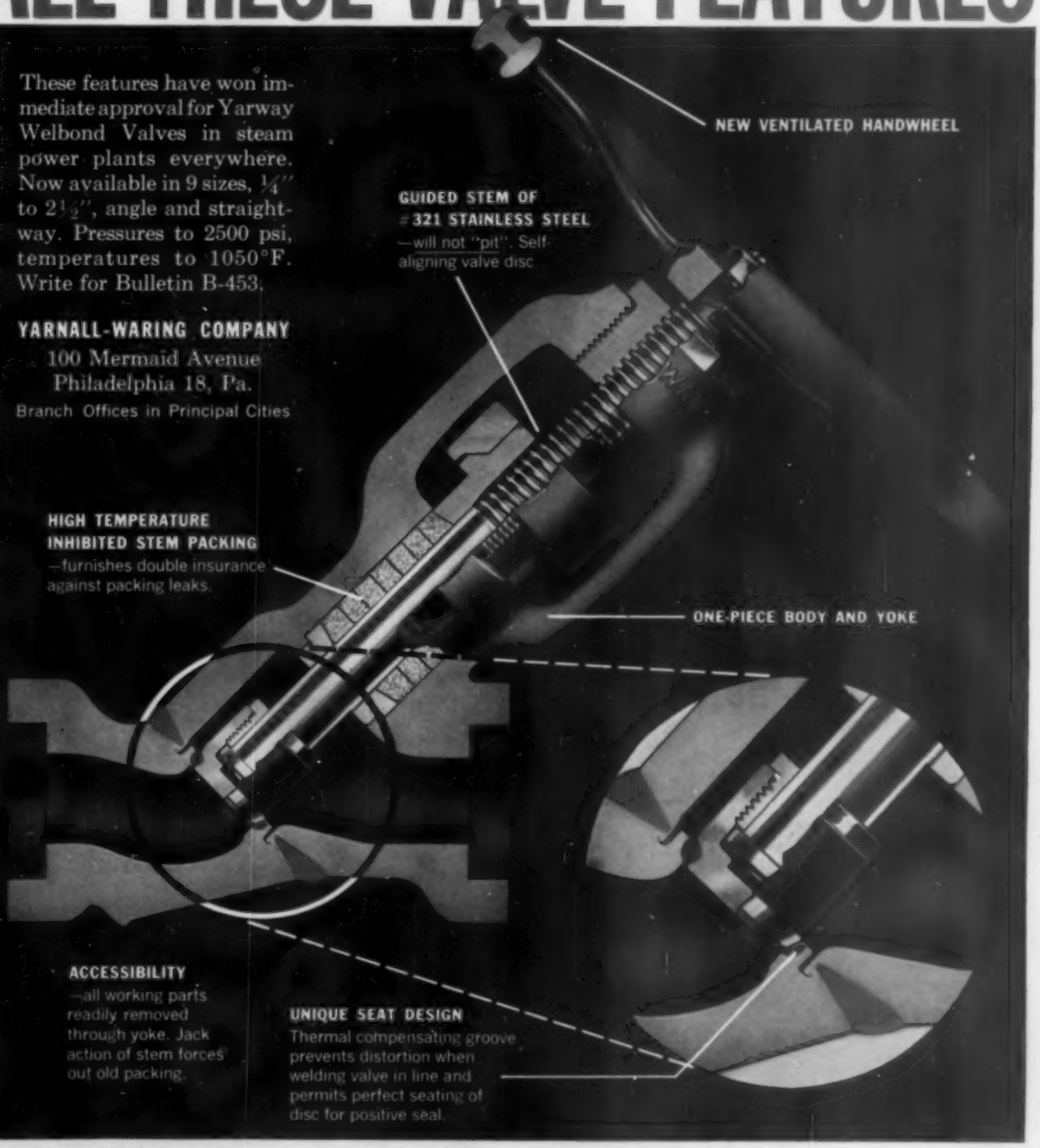
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ATOMIC DEVELOPMENTS

By JOHN F. LEE
SPI Consultant on Atomics,
Broughton Professor and
Head of Mechanical Engineering Dept.
North Carolina State College

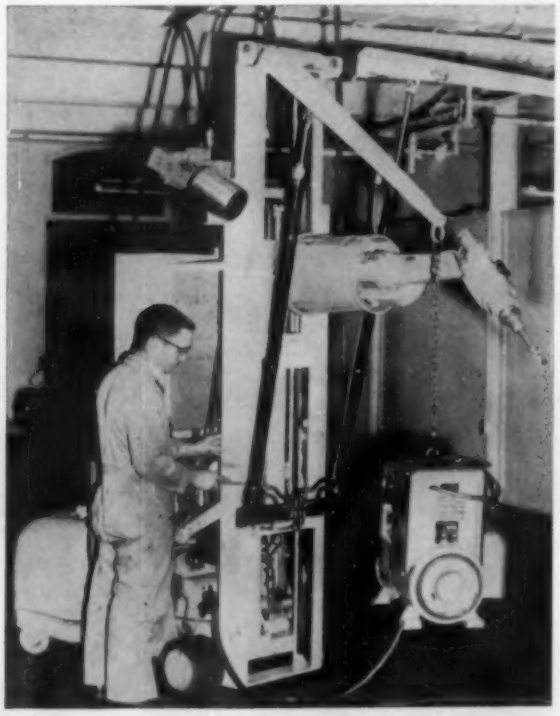
MECHANICAL robots which respond to sound and perform many human functions will soon be operating in Lynchburg, Virginia. As developed by The Babcock & Wilcox Company's Atomic Energy division in Lynchburg and in the research and development center in Alliance, Ohio, the automatons are being designed to perform reactor maintenance and repair operations in radiation fields too "hot" for humans.

The robots are one phase of a facility established to develop prototypes of equipment required to maintain advanced types of reactors that will use circulating liquid metal as the atomic fuel. Known as the Engineering Prototype Development Facility, the unit is part of a program to study, develop, and build a circulating-fuel reactor experiment.

Consisting of six units, the robot fleet will be independently and remotely controlled by radio signals from a "master brain" control console. A closed-circuit television system with a lead glass window, four feet in thickness, will make the radio-active work area easily visible in the control room of the reactor.

Largest and most complex of the robots is a three-ton, eight foot-high fork-lift truck with three arms especially adapted to the atomic age functions they will perform. The most versatile of the three arms is a mobile manipulator capable of duplicating many human wrist and arm functions. The two auxiliary arms can easily lift a small wrench or a 1000 pound object 15 feet in the air.

The other electronically-controlled units are a tow truck for transporting radioactive loads; a pipe welder that can complete a high-integrity, six-inch weld in 30 seconds, equipped with a television "eye" which permits examination; a pipe cutter that can cut a 10-inch diameter pipe. There is also a 50-ton "flying rope" crane with a drive mechanism located



RIGHT — An engineer is shown with the largest of a six-man robot "team" being developed to do maintenance and repair work in radioactive areas. The mechanical monster stands eight feet tall, and can thread pipe and lift heavy loads. At upper left is a television camera which lets the robot's human master see the performance. When completed the robot team will include a pipe cutter, a pipe welder, a tow truck, and a 50-ton capacity crane, in addition to the unit shown here — all ultrasonically controlled from a shielded "master brain" control console.

BELOW — Seated at a remote control console, a nuclear specialist uses a closed circuit television system to study the response of a robot tow-truck to his commands. The work is being carried on at Lynchburg, Virginia.

in an accessible position behind the radiation shield rather than on the crane bridge which is in a radioactive area.

Separate panels manned by two specially trained technicians provide remote control points for the robot maintenance force. Push-button messages are fed into an electronic grid complex which, in turn, transmits coded commands ultrasonically to the robots. Commands are then decoded by the units and carried out. Similar to the "walkie-talkie" technique, the audio-system is also capable of sending operational sounds to the control panel operators.

THE ATOMIC ENERGY Commission has announced the signing of a contract with East Central Nuclear Group, Inc., and the Florida West Coast Nuclear Group for research and development work on a gas-cooled nuclear power plant of advanced design. The plant will be constructed in the Florida West Coast area, under the Commission's Power Demonstration Reactor Program.

Under the contract, East Central Nuclear Group, Inc., will conduct the research program to develop a heavy-water moderated, gas-cooled, pressure-tube reactor of advanced design. The cost of this research program, presently estimated to be about $18,000,000, will be shared approximately equally by East Central Nuclear Group, Inc., and the Atomic Energy Commission.

The contract makes provision for additional research and development work if required. The maximum Commission assistance provided for in the contract, including waiver of use charge for fuel and heavy water, is $13,180,000. Authorizing legislation for the project was enacted by the 85th Congress last August.

The Florida West Coast Nuclear Group will assume construction costs of about $26,000,000 and will operate the plant, with excess operating costs (operating costs above conventional plant operating costs) estimated at about $5,400,000 for the first five years of operation.

The nuclear plant will generate about 50,000 electrical kilowatts and will be designed as the prototype for a 200,000 electrical kilowatt plant.

The prototype plant will use a slightly enriched uranium fuel, but the larger plant would be designed to operate on natural uranium fuel.

It is expected that the prototype plant will be completed by June 30, 1963. Prior to start of construction, a determination of technical and economic feasibility of the plant will be made. The Florida group may choose not to proceed with construction if the reactor is determined not to be technically feasible, or if the cost of producing power would exceed by more than 50 per cent the projected cost of conventional power in the area.

The General Nuclear Engineering Corporation of Dunedin, Florida, a subsidiary of Combustion Engineering Corporation, has been designated nuclear design agent, and the American Electric Power Service Corporation is expected to be the principal design and construction engineer for the project. The Florida West Coast Nuclear Group consists of the Florida Power Corporation of St. Petersburg and the Tampa Electric Company.

THE ATOMIC Energy Commission has given notice that it proposes to issue a construction permit to North Carolina State College for relocation of a low-power training and research reactor on its campus at Raleigh. Although the reactor is presently licensed for operation, a construction permit is required since a material alteration is involved in its proposed removal to another location on the campus.

The new location will be in the Nuclear Science Laboratory, approximately 100 yards west of the Burlington Nuclear Laboratories in which it is presently housed. The reactor is being moved to make room for a new 10 kilowatt reactor for which a construction permit was issued on November 26, 1958.

The facility to be moved is an aqueous, homogeneous, graphite-reflected reactor, operating at a maximum power level of 100 watts. It will be used primarily for training purposes, although it also will be used as a research facility.

IN RESPONSE to industrial requests for larger quantities of Krypton 85, the Atomic Energy Commission has increased the availability of this radioisotope for civilian uses to 100,000 curies per year. Krypton 85 is finding increasing use for activating phosphors in self-luminous light sources.

Some of the major applications where its adaptability has been established and units designed and tested are in emergency aircraft markers, mine safety lamps, ship bulkhead and deck markers, darkroom safety markers, aircraft drogue (a device used in inflight refueling), wing tip, and tail light illumination, and road sign markers.

Reactor-produced Krypton 85 offers several advantages over naturally occurring alpha-emitting radium and polonium which have been used in the past to produce luminescence. It is cheaper, easier to work with, and causes less deterioration of the phosphor than the alpha particles from radium and polonium. This leads to a more constant level of light output and longer life.

Krypton 85 is also routinely used in thickness gages on production lines to help produce more uniform paper, plastics, rubber and numerous other materials. This continuous method of gaging which does not involve physical contact between the gage and the material is especially useful where products are moving rapidly, temperatures are high, and products are soft or easily marred.

Krypton 85 is produced by fission of uranium in a nuclear reactor. This byproduct may then be obtained by extraction from reactor fuel element chemical processing plant off-gases. It has a relatively long half-life of 10.27 years, decaying to stable Rubidium 85 by emitting beta participles and gamma radiation.

The Commission's price for the radioisotope is $50 for each of the first two curies and $15 for each additional curie.

"Here at BERKSHIRE we're hosiery men

LESTER MARBURGER
Superintendent of Plant Maintenance

"We specialize in the manufacture of women's stockings and lingerie," says LESTER MARBURGER. "That's why world-wide Berkshire is the largest selling brand of women's hosiery.

"We've always liked the OTIS specialist's approach to Elevator Maintenance. It means excellent service. In the hosiery industry, the name BERKSHIRE is synonomous with service. And service, even more than charity, begins at home. That's why we've been doing business with the OTIS Elevator Company since 1906, when we erected our first building.

"The OTIS specialist's approach has served us consistently and well. Our only 'down' time, if you'll pardon a pun, is the time necessary to reach the 1st floor from the 5th.

"At present, we have 12 OTIS Freight and Passenger Elevators under OTIS MAINTENANCE. We have complete confidence in their continued performance."

What is the OTIS *specialist's approach* to elevator maintenance?
It is MEN . . . MATERIALS . . . METHODS.

MEN: Elevator maintenance is no one-man job. It is an organization task requiring experts in many lines. No individual, even if he devoted his entire time to the job, could do it properly. It calls for men with an unusual combination of skills plus long OTIS training in studying parts, assemblies, functions, replacement procedures, testing and adjusting. Some degree of elevator complexity can be gleaned from the illustration at right.

MATERIALS: Original OTIS parts and specially designed OTIS maintenance equipment are within one hour of 90% of all OTIS elevators in the U.S. for use in scheduled replacements—and to hold emergency shutdowns to a minimum.

METHODS: With more than 40,000 elevators under OTIS maintenance, OTIS has developed an actuarial procedure that replaces wearing parts well in advance of their breakdown point to hold shutdowns to an absolute minimum and assure the highest possible safety.

elevator maintenance

THAT KEEPS ELEVATORS RUNNING LIKE NEW

OTIS ELEVATOR COMPANY • 260 ELEVENTH AVENUE • NEW YORK 1, N.Y.
OFFICES IN 297 CITIES ACROSS THE UNITED STATES AND CANADA

. . . not elevator maintenance men"

BERKSHIRE KNITTING MILLS
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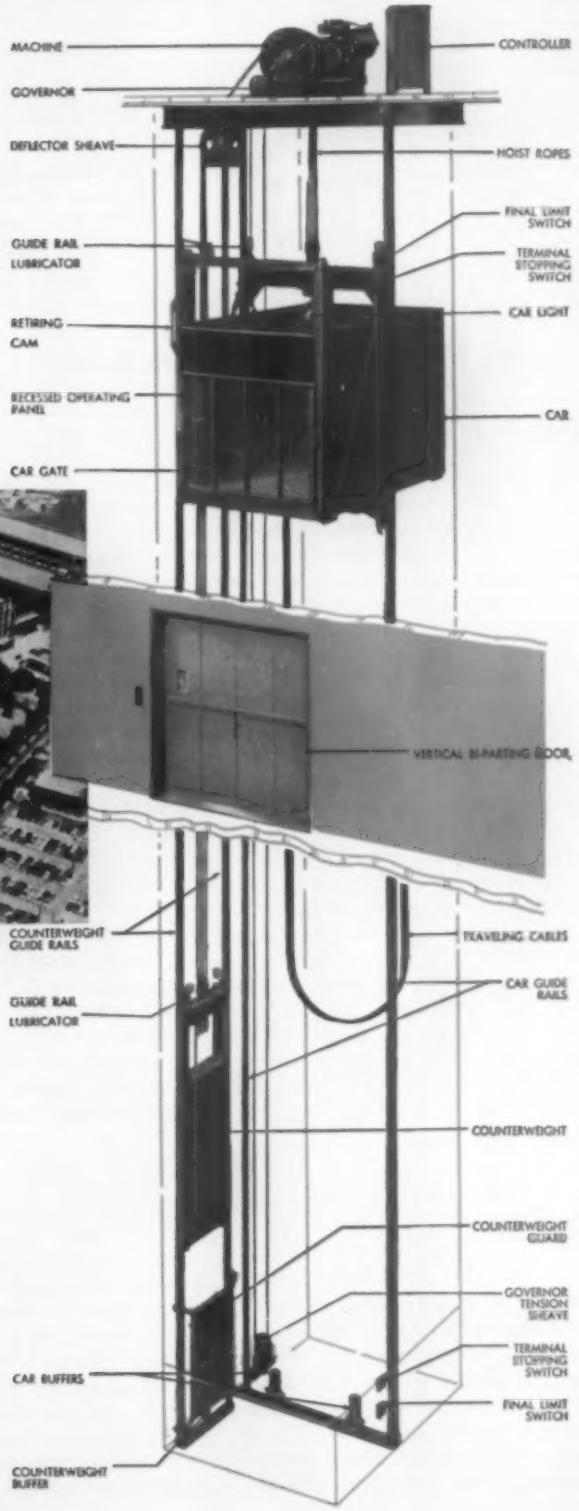


For more information, use Reply Card—Page 69

Centrifugal Pump Clinic

QUESTIONS & ANSWERS — Conducted for SPI readers by **Igor J. Karassik**, consulting engineer and manager of planning and W. C. Krutzsch, assistant Chief Engineer of the Harrison Division, Worthington Corporation.

Wearing Ring Maintenance Procedures

Question . . .

OUR PLANT has a large number of centrifugal pumps of all sizes and all varieties, ranging from many 1½" and 2" single stage close-coupled motor-pumps to several 16" double suction pumps used for water supply service. There are also a number of multistage pumps — of which a few are on cold water service and three are installed in the power plant as boiler feed pumps.

For the last ten years I have been in charge of the maintenance of this equipment. In this work, we have always tried to follow quite closely the recommendations found in the instruction books supplied by the pump manufacturers. Despite the fact that we have as many as seven different makes of pumps installed in our plant, I find that these instructions agree reasonably well on general practices of maintenance. There is one area, however, in which I find considerable disagreement as well as insufficiency of information, and that is in connection with the wearing rings. Some of the pumps have double wearing rings while others have stationary casing rings only.

The instruction books covering each type seem to imply that the particular construction used in the pumps described is superior. But either double rings or single rings must be better. Could you tell me which of the two is preferable and why?

The missing information is the running clearance at the wearing rings in new pumps — which is, of course, the clearance to which reconditioned pumps should be restored. Is there some standard for the recommended clearances for different types and sizes of pumps?

Answer . . .

ODDLY enough, one can say that both single and double wearing rings are satisfactory — depending on the size of the pump and the type and severity of the service. In the smaller sizes, say under 4", it would often be uneconomical and sometimes impractical to supply double wearing rings.

When the single wearing ring clearances need to be renewed, the replacement casing rings are purchased with an undersize bore at the impelled hub fit. The impeller is mounted on a mandrel and a slight truing-up cut taken to restore the concentricity of the wearing surface hub. The repair wearing ring is then bored out so as to restore the initial clearance. Impeller hubs are generally provided with ample metal to carry out such an operation as many as three or four times.

Larger pumps are generally provided with double wearing rings. But the argument that this permits replacement of the rings without any machine shop work or any checking is both incorrect and leading to wastefulness. Mounting a new wearing ring on the impeller hub can distort the concentricity of the clearance turn. As a result, it is imperative that after mounting on the impeller, the outer turn of the wearing ring be still checked and in many instances that a slight truing-up cut taken to restore concentricity.

In addition, the practice of replacing both rotating and stationary rings each time clearances are to be restored is not economical. In order to obtain the greatest "mileage" from the repair parts, casing rings should be purchased with undersize ID and impeller rings with oversize OD.

The first time clearances are restored, the old impeller rings are retained. They are trued up on a mandrel, leaving them mounted on the impeller. Repair casing rings to fit are bored out. The old casing rings are carefully put away in stock. At the next go-round, they are trued up in the ID bore and new impeller rings are finish machined to suit, again after being mounted on the impeller.

It may be interesting to note that a number of high pressure boiler feed pump manufacturers use

Typical Clearance Recommendations For Flat Wearing Ring Joints

Diameter of Leakage Joint in Inches	Diametral Clearance in Inches for Single Stage Pumps	Minimum Recommended Increase in Clearance in Inches: *For Galling Materials	For Multistage Pumps
Up to 4"	.012"	.002"	.002"
4" to 6"	.014"	.002"	.002"
6" to 8"	.016"	.002"	.003"
8" to 12"	.018"	.002"	.003"
12" to 20"	.020"	.003"	.003"
20" to 30"	.022"	.003"	.003"

*Incremental clearances for galling materials vary more widely than fundamental clearances, and in many cases will be as much as 50% of the fundamental clearance.

single rings in these pumps, which run in sizes up to 10,000 hp. It is obvious that this practice is not directed at effecting marginal savings, but rather because of the designers' preference for single rings.

This preference is based on the fact that with stainless steel impellers, wear is slow and the impeller may not need to be refitted with new casing rings in under 80,000 or more hours. On the other hand, the use of separate impeller rings bears with it some risks that the rings will become loosened under the action of centrifugal force.

Thus, as a general conclusion, there is no superiority in either design, but rather a conviction on the part of each manufacturer that he should select that arrangement which in his mind results in the most economical initial cost, coupled with the most economical cost of maintenance.

The only exception worth mentioning is the practice of using hard alloys for the wearing parts, mounted on standard impeller materials. Thus, for severe services, it may be justifiable to use stainless steel impeller rings on a bronze impeller, while the same pump is built with single rings when applied to normal service.

As to clearances, they vary considerably among manufacturers. Nevertheless, a typical tabulation is appended, showing one manufacturer's recommendations. They are given basically for single stage pumps built of non-galling materials. Increases are also indicated for easily galling combinations, such as the various chrome stainless steels. Finally, because multistage pump shafts deflect somewhat more than the shafts of single stage pumps, a further increment is recommended.

Polyester Patches Speed Chemical Cleaning of Boiler

ON ONE OF OUR annual shutdowns we were cleaning two boilers with an acid and caustic boil out of all the tubes. The system was filled and the process of boiling out began.

The boiler was over half full of 6% hydrochloric and hydrofloric acid when several holes in the tubes were noticed.

There were approximately 21 small holes and cracks in the tubes of this boiler.

Our first thought was to weld the holes and cracks. But this was not safe due to free hydrogen present in the tubes as a result of acid reaction with the scale in the tubes.

We next thought of draining and flushing the boiler with water. This would have meant a loss of the acid and a delay of 16 to 24 hours. Also there would still be a chance of some gas remaining in a portion of the tubes.

We decided to try patching the tubes with reinforced polyester resin. After a closer look at the ruptures a course of action was agreed upon.

First, the holes were peened with a hammer to close the openings. Then a wrapping of high voltage rubber electric scotch tape was applied to help prevent leaking and maintain a dry surface. Over this a wrapping of paper masking tape was applied to assure the polyester to adhere.

The surrounding metal area was wire brushed as bright as possible. Following this the area was washed with acetone to remove any contamination on the surface.

Next, we cut the glass cloth to cover the holes and cracks. If the cloth can go around the tube it is much stronger. This should be a double lamination. The polyester resin was mixed for a quick 15 minute cure because of seepage that might occur.

We applied a very wet coat of resin and then applied the cloth, rubbing out all bubbles and air pockets. Then we applied another coat of resin and cloth on top of the other patch, again working out all air bubbles. After the resin took its set we applied another coat of clear resin.

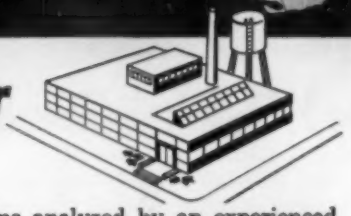
Following the patching, the boiler was completely filled and the fires lit. The steam was brought up to 420 F and 300 psig for 2 hours, then it was cooled to 140 F for 8 hours.

During this time the tubes were filled with acid and caustic for different periods. At the end of a 10 hour boil out the patches were inspected and we could not find a sign of any leaks on any patch.

The trade name of the material used was Brutem Polyester Resin. Also an Epoxy Resin can be used the same way. One supplier of polyester is Celanese Chemical Company, and epoxys are made by the Shell Chemical Company.

By D. D. CONE, Texas Butadien & Chemical Company, Channelview, Texas.

brought to your door



Now you can have scale, rust, grease and other objectionable deposits removed from your boilers, condensers and other heat exchange equipment. An Anderson Chemical Company mobile cleaning unit will come to your plant, anywhere in the Southeast, and remove those unwanted deposits. The special equipment and technical knowledge required are brought to you at a time when your equipment can be out of service for 24 hours without hampering production.

The Anderson Emergency Chemical Cleaning Service does not require long shutdowns for your equipment to be dismantled and re-assembled. First, an Anderson service representative will have your scale and rust problems analyzed by an experienced laboratory staff. Then a proposal will be made to you without obligation. On a scheduled date of your choice the mobile unit and a service representative will come to your plant and conduct the entire operation. The *field-proven* cleaning methods used assure maximum protection of your equipment during the cleaning process. You'll find the cost very reasonable with satisfactory results guaranteed.

But the Anderson service doesn't stop there . . . one of their trained service representatives will help you *keep it clean* by outlining a simple preventative maintenance program.

For complete details and an analysis of your water treatment problems, write today. There is no obligation.

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, INC.

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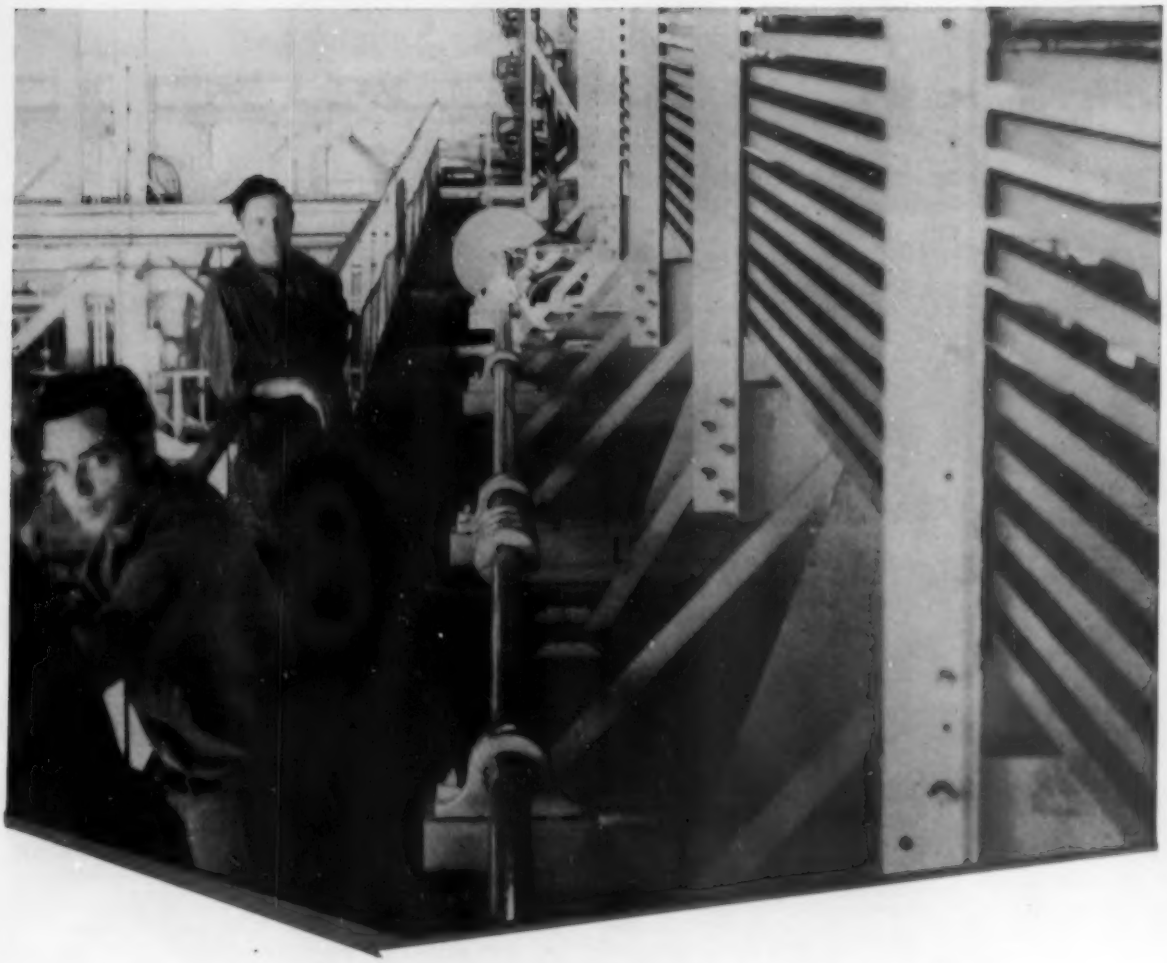

here's how Dixie Bearings, Inc. cuts the overhead on overhead cranes

This 30 ton crane with a 95 foot span was so inefficient it lost many hours of work every month. Our engineer recommended a complete conversion to anti-friction bearings and showed plant management how easily and inexpensively the conversion could be accomplished.

We supplied all bearings, seals, housings, and caps for 16 bridge wheel bearing journal boxes. The drive motor was converted to roller bearing end bells.

Main drive line shaft from the motor to the wheels was converted to roller bearing pillow blocks. An adapter on the wheel axle eliminated machining. The only additional work needed was to weld a plate with bolt hole under the crane frame where units were mounted.

Crane now starts under load at first contact point on control and is the fastest crane in the plant. Crane was pulling 350 to 400 amps.; now uses less than 200 amps. Crane operator withdrew a request for transfer to another crane after conversion was completed.

Do you have a slow moving, inefficient crane in your plant? Ask our branch nearest you to show you how it can be converted to a fast, efficient piece of equipment at a minimum expense. Call or write NOW.

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Providing bearing service in the South➤ **FLORIDA:** Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville
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Conducted by ROBERT H. EMERICK, North Charleston, S. C.

Fewer Squeaks and Squawks

Question . . . . . .

OUR SHOPS PRESENT certain hazards to the feet and eyes of our workers, and to safeguard against them, we have set up some safety rules which our employees vigorously resent.

Most disliked is the new requirement to wear safety shoes at all times. Generally, they claim the shoes are too expensive, extremely uncomfortable, and protect only a small area of the foot. One man who bought them, refused to wear them after the second day and told his supervisor:

"They damn near ruined my feet. After a few hours in those things, I felt like crawling on my hands and knees."

Because of such reports, we seem to be getting nowhere. Is there anything we can do to change the shoes or change the attitude toward them?

Suggestion . . . . . .

SINCE THE SAFETY shoes are both heavier and stiffer than the conventional work shoe, breaking them in is hard on the feet and the whole physical make-up of the wearer. Men with some sort of foot deformity, such as bunions, arthritic joints, and calcium deposits, even extreme flat feet, are particularly distressed by the breaking in process.

We must recognize the fact also, that individuals conscious of foot discomfort, are bound to work a little less efficiently, as their attention keeps coming back to the area of discomfort. The problem, then, is to achieve a condition of safe and comfortable foot wear with a minimum of inconvenience and irritation to the workers.

Here is a suggested program that has been quite effective in some organizations, although somewhat less than perfect:

1. A committee of 2 or 3 men from the shops is designated to examine the available safety shoes and charged with selecting the make, which to them, seems to be most suitable to the nature of the shop work. For example, a shoe with non-skid soles might be desired, even if it were to cost a little more.

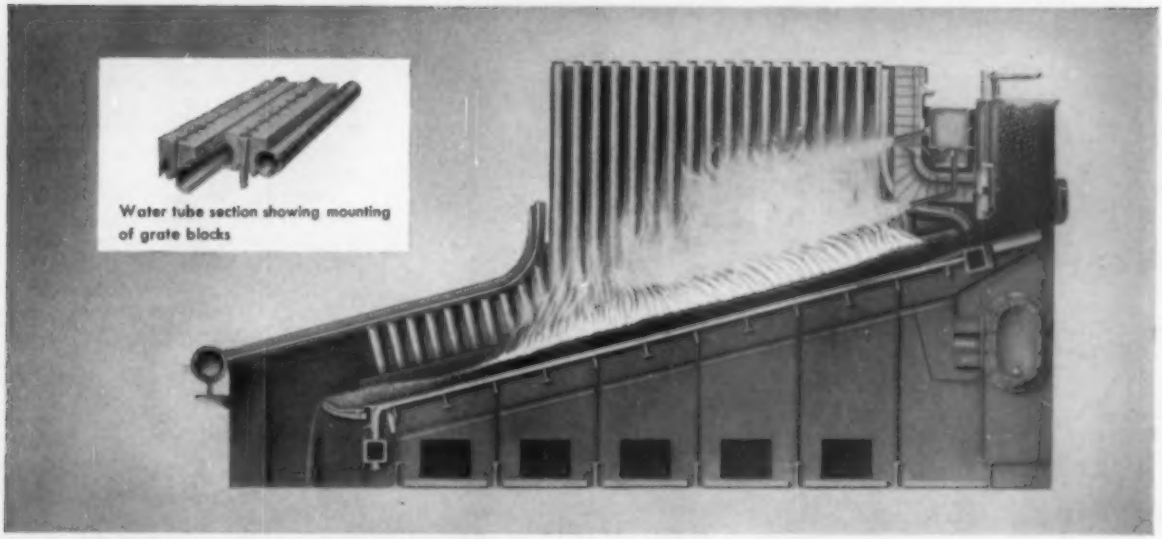
2. Every employee is required to indicate his size, both length and width. Any foot abnormality is noted on the list, and this individual is given special consideration and help from a local foot specialist or chiropodist, in settling on his size, and form of shoe. Occasionally, a safety shoe must be made for a particular condition, which involves extra cost and time.

3. The company buys the shoes, distributes them to the workers, and recovers the investment by deducting $1 a month from the pay of the individuals who receive the shoes. This very much softens the complaint of "too expensive" and may all but remove it from the picture. The shoes are sold, of course, at cost.

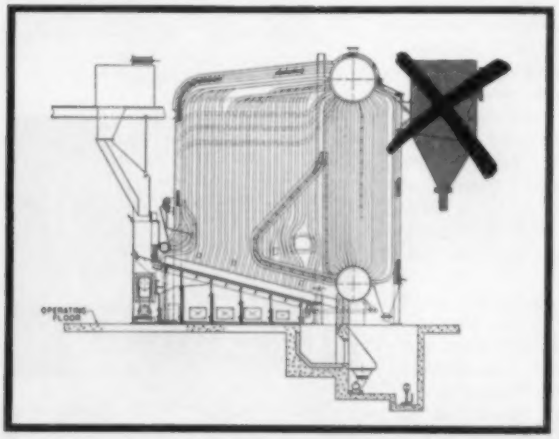
4. A breaking in period is designated. During this period, the shoes may be worn off and on, as the condition of the man's feet allows. However, there must be a cut-off date, after which the shoes are to be worn continuously during the working hours, and not wearing them brings on disciplinary action. Any extension of the breaking in period requires a doctor's order.

With a few individual exceptions, to be anticipated in any large group, this program wins general cooperation. It might involve a year's time to thus put the whole plant into safety shoes, but this is better than creating a shop-wide resentment.

Only AE Vibra-Grate Stokers give you these 3 important benefits



Water-cooled grates. Water-cooling . . . directly connected to the boiler circulation system . . . guarantees the longest grate life available in any stoker today. Proven maintenance costs are less than one cent per ton of coal. In fact, one major installation has used less than $200.00 worth of repair parts in over four years of continuous operation!



Elimination of dust collectors and cinder return systems. Vibra-Grate burns the coal on the grate . . . dust collection and cinder return systems are not needed. You will never have to be selective in the grade of coal you burn either. Vibra-Grate feeds wet or dry fuel, high or low grade coals. It can burn gas or oil singly or in combination with coal. Overfire air assures complete combustion, giving absolute freedom from smoke at high or low ratings.

Higher efficiency. Intermittent vibrating motion of the grate feeds and moves the fuel . . . insuring even, compact distribution on the bed. A combustion-controlled electric timer determines the vibration frequency as required by fuel and steam demand. There are no light spots or holes to reduce efficiency. The grate supports form air-tight zoned sections dampered to permit accurate regulation of undergrate air.

THE AE VIBRA-GRATE offers advantages in stoker operation and efficiency that have never been available before, because it is the only stoker which combines the maintenance saving features of water-cooling and the high efficiency features of a vibrating grate and controlled zone undergrate air. Only from Vibra-Grate can you get such dramatic reductions in maintenance costs . . . as well as efficiencies that can't be equalled. Write for complete information on what Vibra-Grate stokers can do for you in terms of lower operating costs. American Engineering Company, Dept. S-103, Philadelphia 37, Pa.

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For more information, use Reply Card—Page 69

NEW Product Briefs

. . . there is always a BETTER WAY

Static Relay

G-1 The new static over-current relay unit for switchgear can be modified very easily for specific applications according to **Allis-Chalmers Mfg. Co.**, Milwaukee, Wis. The building blocks comprising the basic relay are shown in the illustration on the left.

Since the power required to operate the new relay is less than one-half volt-ampere, the relay may be operated by using small auxiliary CT's. The relay may also be connected directly across the secondary winding of the main current transformer, which is shunted by a resistor.

The inverse-time-current relay unit is connected in series with a pulsing-type switching unit. This unit is designed to use relatively low input power and functions as an amplifier.

The basic unit may be controlled by addition of a voltage restraint unit shown on right. The restraining unit can also be designed to respond to current, power, phase angle, or may consist of a transducer to translate pressure, light quantities, etc., into discrete electrical quantities.

By addition of a control unit responsive to electrical quantities (example, power) the relay is then responsive to power as derived from suitably connected current and potential transformers.

The relay unit is designed as a "plug-in" type. This allows for easy installation and withdrawal from the case. The usual current transformer shorting switches are eliminated.

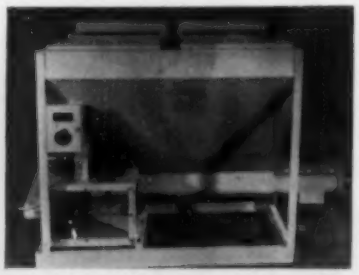
Indication of relay operation is given by a completely static type target light unit consisting of a set of small neon lights. They operate in combination with a pair of digital computer style memory cores. Reliable indication is obtained, eliminating the chance of false target indication so often encountered with the present mechanical latch-type targets.

All relay components are mounted on a printed circuit board. The board is inserted on a metal frame and covered with an epoxy potting compound.

Variations in relay settings are made by adjustment of selective controls accessible from the front of the relay. These controls adjust the time range and the current range within which the inverse-time-current unit and the instantaneous current element function.

Screw Feeders

G-2 A new line of specially designed loading and feeding equipment to meet widely varying requirements has been announced by **The Bucket Elevator Company**, 360 Springfield Ave., Summit, New Jersey. Based on standard component parts, each item is modified to suit the specific job by the addition of special control and operating equipment, or alternate design choices. The result — a "custom-built" machine tailored to solve each feeding problem; the cost — remarkably low.



Illustrated is a 20 cu ft capacity bag loading and screw feed hopper. The machine is in use, feeding a powdered chemical at a paper plant at rates from 15 to 120 lb per hour. Note speed adjustment hand wheel and tachometer for extreme accuracy.

For More Free Data FILL IN CODE NO. on the Handy Return Card — Page 69

Palletainers

G-3 The Palletainer Junior, offered by **Union Steel Products Co.**, Albion, Mich., is used for small parts handling and in crowded machine areas where the larger Hi-Lode Palletainer or corresponding solid container proved to be too large. The model 3220 Junior is collapsible, while the smaller 2016 is rigid. The 2016 will stack on the 3220 Junior, and the 3220 will stack on the larger 32" x 40" Hi-Lode Palletainers, giving a modular unit.

The Juniors offer smaller mesh openings, collapsibility on the larger container, stackability, and full use of available air space. The fact that the Juniors are low in cost also make them a very desirable container. As an example, the model 3220 Junior is available in smaller quantities for $20.00 each. The 3220 can also be equipped with a type "C" side gate, to be used as a complete portable bin assembly.

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Electrification of Tongue Switches

G-4 Two and three-way tongue switches can now be electrified with **Feedrail Corporation**, 125 Barclay St., New York 7, N. Y. "100" trolley busway electrification.

The development of special transfer track sections for tongue switches now permits Feedrail to provide safe, fool-proof electrification for hoists at all points along any monorail run, including systems with turntables and slide switches.

Since the sizes of tongue switches vary, the Feedrail electrification must be fabricated to suit the individual switch.

1. Subox is the only paint in America made with suboxide of lead. Because it continues to be chemically active after drying, it gives more anti-corrosive protection — clings better to the small surfaces of fence wire. A single coat lasts many years.

2. Subox makes fence painting easy and economical. It can be brushed or sprayed on, but it is applied especially fast with a roller or an ordinary floor broom.

3. The most popular shade of Subox (Subalox 508) closely resembles weathered galvanizing. It is an ideal spot paint for all galvanized surfaces. Subox also is available in a wide range of modern pastel and dark colors.

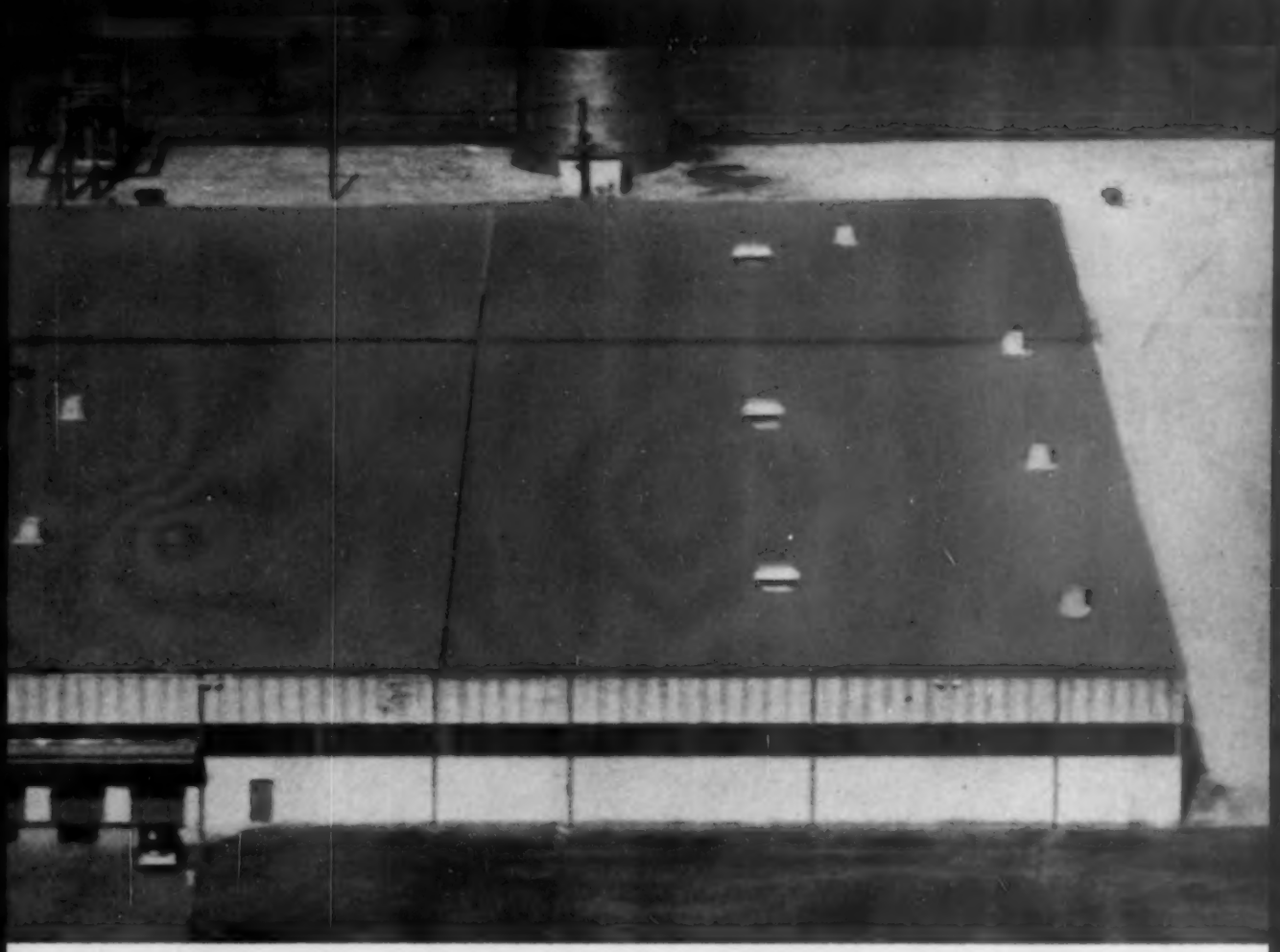
Write today for technical literature, color card and the booklet "Simplified Fence Painting."

SUBOX PAINTS

Subox Inc.

Established 1924
6 Fairmount Plant
Hackensack, N. J.
Subox Company of Canada — Weston, Toronto 15

THIS IS ANACONDA—



AT WATKINSVILLE, GEORGIA:

Anaconda proudly announces the opening of a modern Wire & Cable Plant in the South... for the growing South!

There's an important addition to Anaconda's map of the United States—and you'll find it located in northeastern Georgia. It's Anaconda's new Watkinsville, Georgia, manufacturing plant, now officially "open for business."

This plant will provide the way to better-than-ever service to Anaconda customers throughout the South—thanks to its modern manufacturing and storage facilities, and central location.

In addition, the complete research and engineering facilities and the varied manufacturing skills of the entire Anaconda Wire & Cable Company are available to—and stand behind—the new Watkinsville plant, an expression of Anaconda's pride to be part of the growing, dynamic South.

DISTRICT SALES OFFICES ARE LOCATED IN
Charlotte, N. C. • Atlanta, Ga. • Birmingham, Ala.
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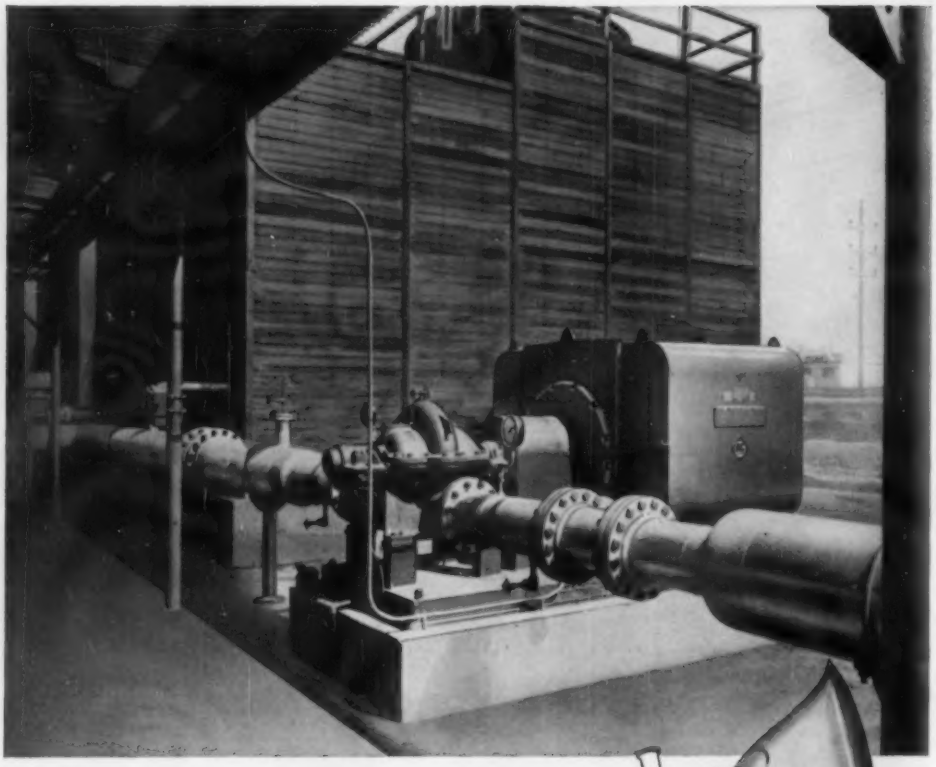
ANACONDA®
COPPER AND ALUMINUM WIRE & CABLE

ALLIS-CHALMERS

In pace with POWER... ALLIS-CHALMERS



CONTROL ALGAE

easy, low-cost way

Eliminate problems of plugged pump strainers, coated heat-exchanger tubes and coated slots in cooling towers.

Control is safe . . . quick with Allis-Chalmers No. 120 Series Algaecide.

This algaecide is toxic to more algae than any other. On the other hand, it has low toxicity to fish or animals and is extremely safe to handle. Even in concentrated form it is only a mild irritant to skin and hands.

A little goes a long way! Only 2 to 5 ppm are required for effective dosage of most organisms. It's easy to feed into the system . . . and is non-oxidizing and corrosion inhibiting.

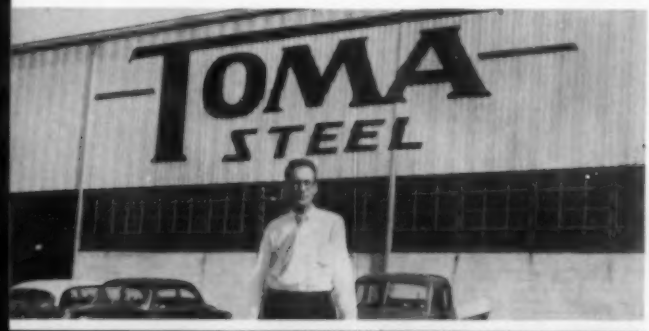
No water conditioning specialist needed to use it! Buy it and try it. Purchase directly from your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

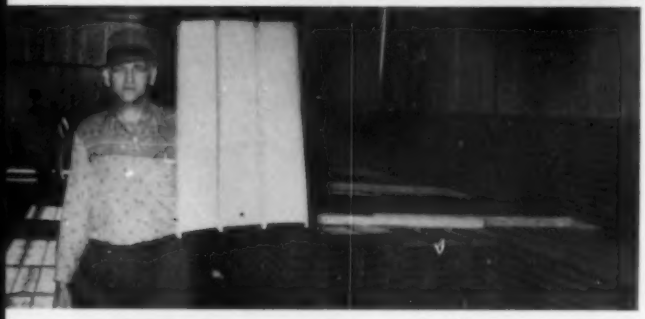
A-C ALLIS-CHALMERS

A-5972-PR

ALLIS-CHALMERS

Problem: A BIG MEMPHIS SUPERMARKET NEEDED A STORE FRONT THAT WAS DIFFERENT AND ECONOMICAL





Solution:

IN MEMPHIS, National Tea Stores wanted a different and attractive store front for a building nearing completion. Our Memphis industrial sales representative, Jerry Harding, had talked to one of the contractors, about Colorweld baked enameled aluminum and a color sampler provided by Jerry was given to the National Tea engineers. They were enthusiastic, but they had to be shown that Colorweld could be formed to the desired shape. At this point, Toma Machine and Supply Company came into the picture.

WITH TIME SHORT, Jerry, with the color chosen by the engineers, had a sample sheared to size in our Memphis plant and rushed it to Ben Toma for trial. In less than 24 hours the formed panel was successfully produced and placed in the hands of National Tea's purchasing department. All specifications were met by the Colorweld panel and an order was placed with Toma for the panels necessary to complete the job.

JERRY HARDING played the part of a truly creative salesman in this story. His close cooperation with Toma and with the other principals helped create acceptance for the product, and ultimately gave National Tea Stores a permanent, attractive store front that will be inviting to shoppers for many years to come. Jerry is just one of over 140 trained service representatives who are always on call to help you with your materials problems. Colorweld is just one of hundreds of products in our warehouses right now waiting for your order.

OUR TRAINED SALES representatives welcome the opportunity to help solve your materials problems. Our vast inventory of metals and other industrial products make economical solutions easy. Having more than ten acres of materials from which to select at your disposal can mean the difference between red ink and black ink in your books, and this is exactly what we have to offer . . . PLUS the kind of assistance demonstrated in this story. Why not call our nearest Branch today?

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ALUMINUM MILL PRODUCTS
INDUSTRIAL BUILDING PRODUCTS
STEEL FLAT SHEETS
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Savannah, Ga.

REYNOLDS ALUMINUM SUPPLY CO.

Established 1914

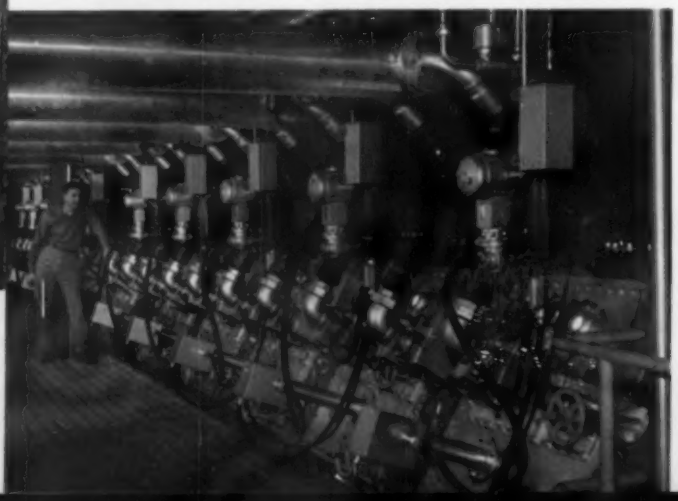
GENERAL OFFICES: ATLANTA, GEORGIA

One TURBO FURNACE

The Riley Turbo Furnace Boiler is dominant structure at Sterlington Steam Electric Station near Monroe, Louisiana.

Weather resistant, colorful porcelainized panelling covers setting buckstays.

Ten of twenty Riley Directional Flame Turbo Furnace Burners. Opposed firing produces turbulent flame at uniform level across full 56 feet of furnace width. Each burner is equipped with remote automatic shut-off and flame sensing devices.



Leads to Another–

Performance at Sterlington, La. Is Basis For Decision To Install 1,650,000 lb/hr Turbo Furnace Boiler At Push-Button Operated Little Gypsy Steam Electric Station.

Louisiana Power & Light Company's new Little Gypsy Station is scheduled to go into operation early in 1961. This pioneering plant will be completely push-button operated. The design of the 1,650,000 lb/hr Riley Turbo Furnace to be installed is based upon the following exceptional operating characteristics of the 1,550,000 lb/hr Turbo Furnace at Sterlington Steam Electric Station.

Low air heater exit gas temperatures — high unit efficiency.

Low forced draft fan pressures — low auxiliary power.

A flat superheater and reheater metal temperature traverse across full furnace width.

Primary and reheat temperatures maintained from below 50% load to full load.

With bottom firing — full utilization of water wall surfaces.

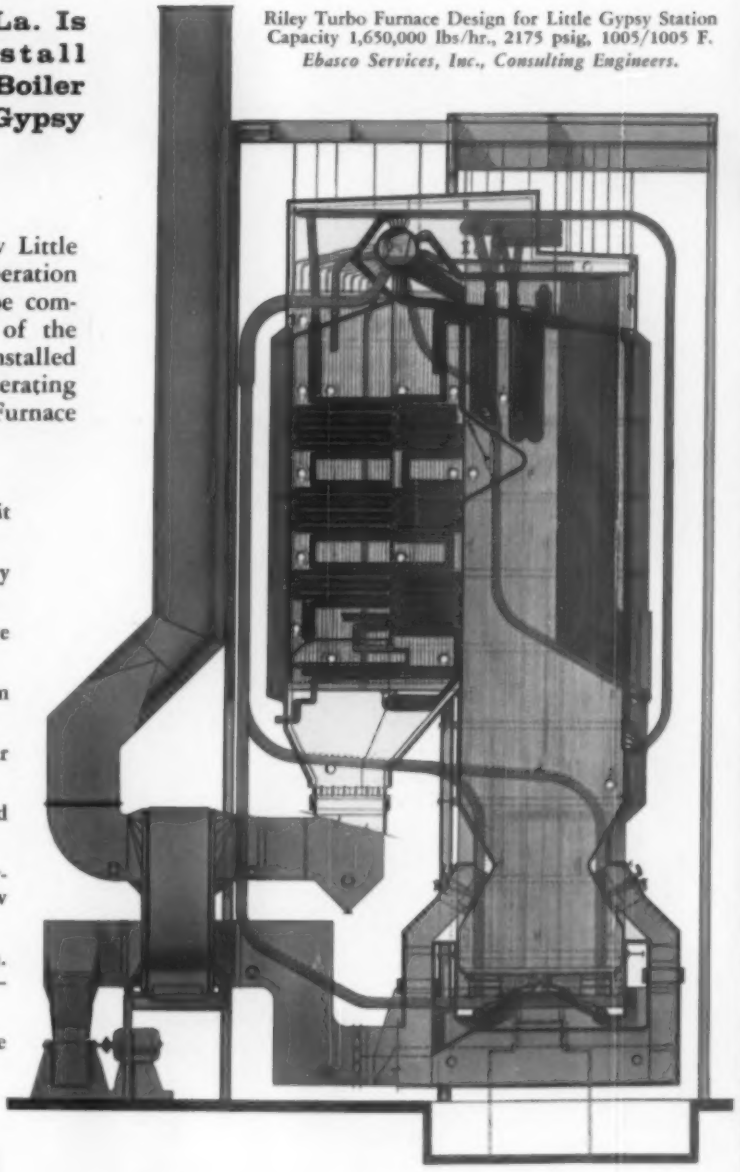
One level firing provides ease of observation and operation.

Gas burns with luminous flame with similar furnace temperatures as coal — hence, quick and low cost conversion to coal firing is possible.

With coal firing flyash is reduced to a minimum. With continuous slag tapping and reinjection — carbon loss is negligible.

With coal firing an exceptionally clean furnace is maintained.

Riley Turbo Furnace Design for Little Gypsy Station
Capacity 1,650,000 lbs/hr., 2175 psig, 1005/1005 F.
Ebasco Services, Inc., Consulting Engineers.



Monitoring at Sterlington Sets Stage For Complete Automation at Little Gypsy

At Sterlington, digital scanning, logging and computation of temperature conditions and other operating factors of furnace, boiler, turbine, generator, feedwater, and auxiliaries are the basic elements for complete automation of the Little Gypsy Steam Electric Station. Procedure, with audible and visible alarms, enables one operator in a centralized control room to make proper decisions for safe and efficient operation of entire plant. The operating characteristics of Riley Turbo Furnace Boilers are ideal for automatic push-button plant operation.

A survey of your plant by qualified consulting engineers could show ways of making substantial savings in your power costs.

RILEY

STEAM GENERATING & FUEL BURNING EQUIPMENT

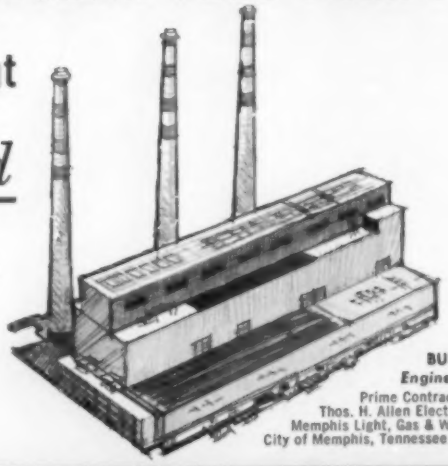
RILEY STOKER CORPORATION, WORCESTER, MASS.

Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Jacksonville, Kansas City, Los Angeles, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Salt Lake City, San Francisco, Seattle, St Louis, St. Paul, Syracuse, Worcester.

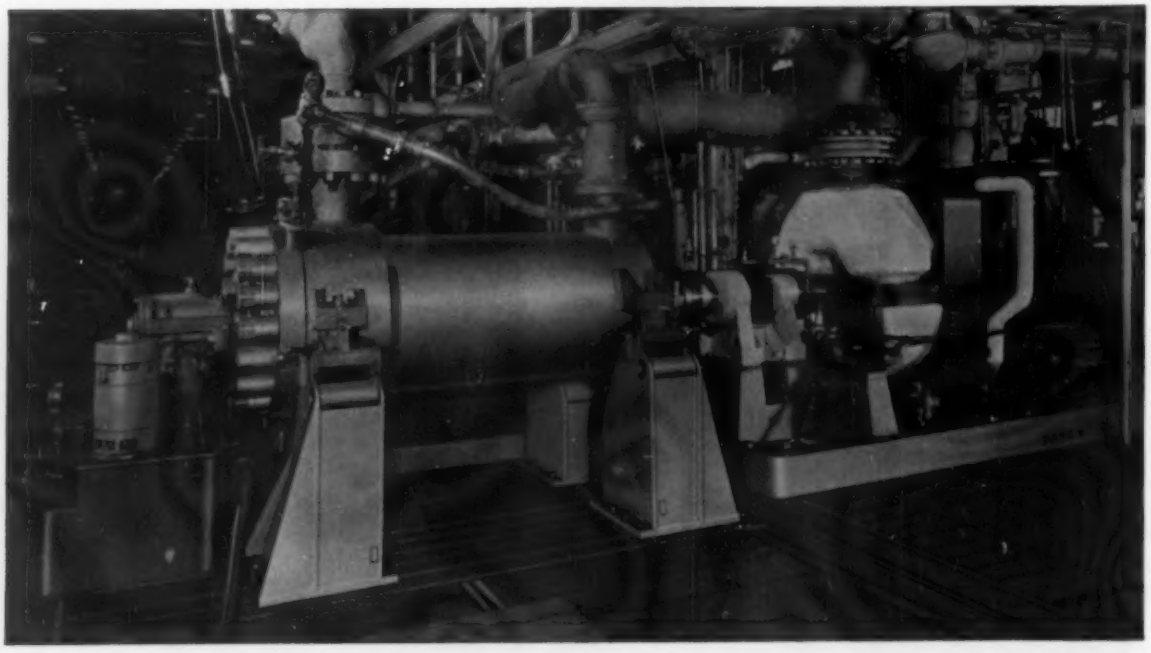
9 PACIFIC BOILER FEED PUMPS

performance-tested in our plant

Performance-proved in Memphis...



BURNS AND ROE, INC.
Engineers and Constructors
Prime Contractors for the
Thos. H. Allen Electric Generating Station,
Memphis Light, Gas & Water Division,
City of Memphis, Tennessee



One of nine City of Memphis 12-stage Pacific boiler feed pumps on performance test in Pacific's especially engineered testing laboratories. All nine pumps were completely tested at Pacific — are now on the line in the Memphis plant...

INSPECTION – Each and every part of PACIFIC Boiler Feed Pumps is inspected and checked prior to assembly. The finest precision gauges are used to check the accuracy of each part, to insure the proper fit during assembly as well as the proper fit when replacement parts are installed in the field.

HYDROSTATIC TESTS – Each part subject to internal pressure, whether forged or cast, is hydrostatic tested. This includes such parts as the case, heads, jacketed packing housings and bearing housings.

PERFORMANCE TEST – PACIFIC's test laboratories are equipped with calibrated motors and instruments; a variable-speed steam turbine coupled to a torque meter. Closed tanks, vacuum pumps and all other equipment necessary accurately establish the complete performance characteristics of each pump. Test procedure for multi-stage pumps also includes a check of axial thrust.

PACIFIC PUMPS
Inc... A Division of Dresser Industries, Inc.
HUNTINGTON PARK, CALIFORNIA
Offices in all Principal Cities

BF-29

SPECIAL FITTINGS Need *NOT* Delay You

Entire interior and exterior surfaces of special stainless elbows for nuclear power plant are inspected with dye penetrant in search of microscopic surface imperfections. Elbows are 16" O.D. with 102° included angle and long tangent on one end.

Midwest Can Make *and* Deliver

An exclusive and flexible manufacturing process enables us to make welding fittings of any material available in plate that can be worked and welded. As plate is more readily available than pipe, in special materials and thicknesses, deliveries are much better.

Elbows with special included angles, special tangents, special wall thicknesses and of special materials are easily and promptly made. Closer tolerances are inherent in the Midwest process. Quality control always exceeds code requirements . . . can be as comprehensive as you need.

Whether or not you use specials, Midwest Welding Fittings will do a better job for you. Consult your distributor, or write us for new Bulletin 5801.

MIDWEST PIPING COMPANY, INC.

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PLANTS: ST. LOUIS, CLIFTON, N. J. and LOS ANGELES

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STOCKING DISTRIBUTORS IN PRINCIPAL CITIES

Note the exceptionally long tangent on one end of this 36" O.D. 90° short radius elbow made of special carbon steel. Similar tangent could have been provided on other end if required.

18" O.D. x 1¼" wall 90° elbows (2¼% chrome ½% moly) being sized in compression by totally enclosing dies. The exceptional dimensional accuracy that results is possible only with the Midwest process.

Interior surface of 30" O.D. stainless steel welding elbow for liquid sodium nuclear system required a finish of 125 micro-inches or better.

8060

MIDWEST WELDING FITTINGS

IMPROVE PIPING DESIGN and REDUCE COSTS

New Product Briefs (Continued)

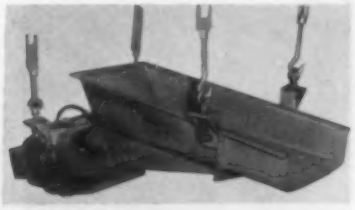
Cleveland Tramrail's extensive exhibit for the 1959 MHI exposition.

Overhead Cranes

G-5 **The Cleveland Tramrail Div.,** Cleveland Crane & Engineering Co., Wickliffe, Ohio, exhibited a complete diversified line of overhead materials handling equipment in operation at the Material Handling Institute Exposition in June.

Their complete new line of electrification for cranes, runways and overhead handling systems was shown. This takes in conductors and collectors with current - carrying capacities ranging from 70 to 6000 amperes.

The display included manually-operated and power-driven overhead tramrail cranes, carriers and hoists. Of special interest was a completely automatic system which illustrated automatic operation of both cranes and carriers, as well as automatic handling from one elevation to another.



High Capacity Vibratory Feeder

G-6 With a capacity conservatively rated at 50 tons per hour, the new Hi-Vi Vibratory Feeder, Model V3B-70A, announced by **Eriez Manufacturing Company,** Erie 6, Pa., offers a unit of extremely powerful, rugged and compact design specifically developed to meet the exacting demands of a wide range of heavy materials handling problems.

It has the electro-permanent magnetic drive system which operates directly from alternating current without a rectifier. Like the smaller models, the new 70A also employs the Eriez spring system of special epoxy-bonded fiberglass, which has proved itself extraordinarily long-lived.

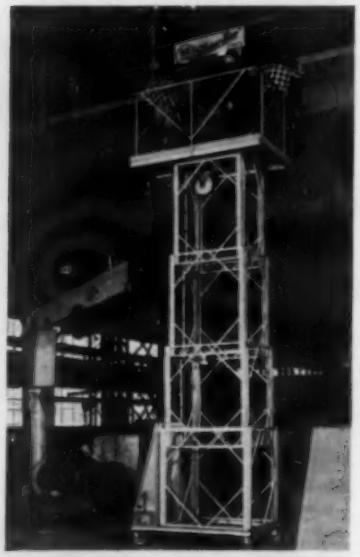
While essentially an automatic constant-volume feeder of bulk materials in a wide range of particle sizes, the 70A is also ideally adapted to spreading, drying or agitating materials, handling hot materials, or moving materials into hot areas, at a precise rate. A simple variable auto-transformer type control is furnished to vary the applied line voltage permitting quick, accurate adjustment to the optimum feed rate for any given material.

For More Free Data FILL IN CODE NO. on the Handy Return Card — Page 69

Portable Push-Button Scaffold or Tower

G-7 **Reynolds Televator Corp.,** 1104 Sixth St., Muskegon, Mich., has developed an all-aluminum scaffold that works through a series of nesting frames, which vertically telescope to the exact work height desired by the mere pushing of a Hoist-Lowe button, thus allowing one man erection and storage of the equipment.

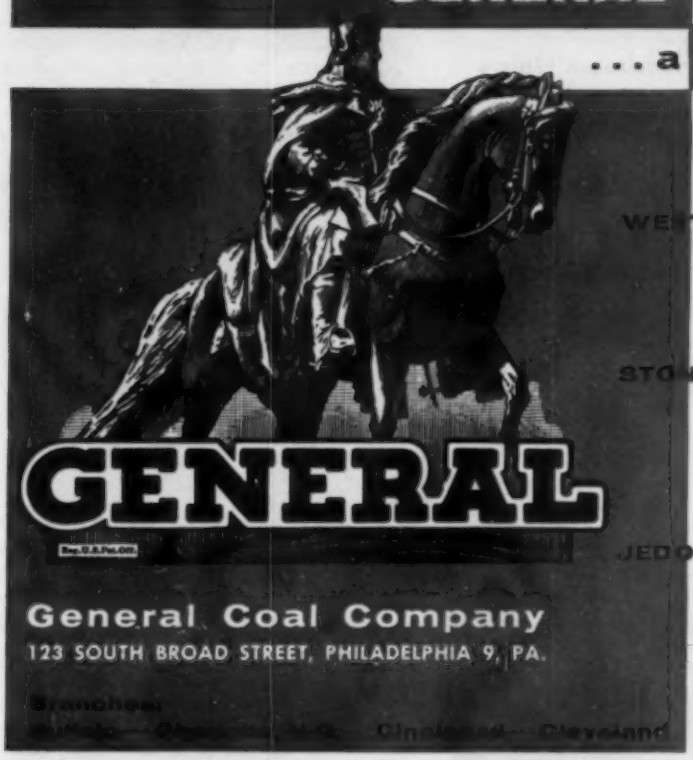
The structure is designed with emphasis on lightness of weight, high safety factors, large area platforms with stability and speed to reach varying degrees of height. All the structural members are bolted to facilitate servicing and replacement of parts, if major damage occurs.



The model shown herein has a 48" x 84" platform with an inbuilt ladder access trap-door. It also features integrated folding safety rails and protecting toe boards. When the unit is in a compacted position it will clear a standard 6'8" height door. Unit comes with 8" or 6" casters, complete with both swivel and floor locking devices.

The model shown has a platform elevation of 20' thus allowing a man to work at a 26' level with the convenience and safety he would have at ground level. This model weighs 980 pounds and has 800 pounds platform capacity. All models may be transported in a standard pickup truck or it may be secured to the bed of the truck and used in or out of buildings as truck mounted equipment. The casters allow the unit to be very easily moved about the plant. The unit is supplied in elevations of 20, 25, 30 and 35 feet.

GENERAL



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For many decades, General Coal and its Associated Companies have successfully met the varied needs of all types of coal consumers. You can rely on this experience for all your coal requirements.

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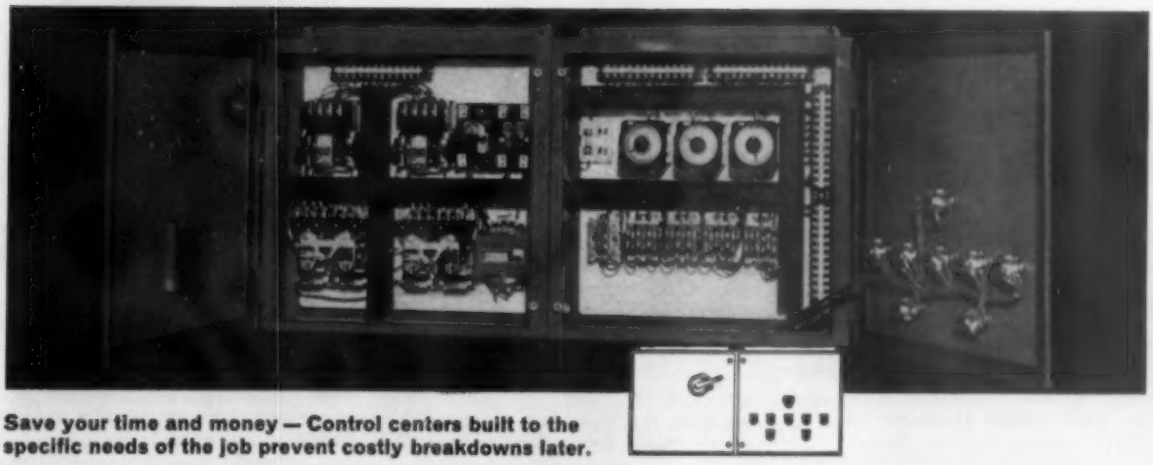


Save your time and money — Control centers built to the specific needs of the job prevent costly breakdowns later.

The Thomas B. Combs Co. has designed and built many control panels like the one above. Specializing in quick deliveries, we invite your problems and prints for complete estimates. Built from the best components available, Combs Panels are superior in every detail of construction. Write or phone for full information to:

THOMAS B. COMBS COMPANY

Custom Installations for 20 Years

1823 GORDON ROAD, S. W., ATLANTA 10, GEORGIA — PHONE PLAZA 8-5516

New Product Briefs (Continued)

Synthetic Slings

G-8 The introduction of nylon and dacron into the manufacture of slings has broadened their versatility, according to **Columbian Rope Company,** Auburn, N. Y., which recently started marketing DuMor slings of nylon and dacron made with a special Durable-Weave construction.

The principal advantages of these slings of synthetic webbing are their high flexibility, great strength and light weight. The flexible webbing conforms to the shape of the load and bends across the length of the sling. Their wide bearing surface also provide better load balance and gripping power, particularly in lifting hard-to-handle items such as round, square, hex or flat steels. In many cases the light weight and ease of handling of the synthetic slings make it possible for one man to rig loads which ordinarily would require the services of two men.

Bin Sections

G-9 A complete line of adjustable steel shelving, including four new, standard bin type sections, is being manufactured by **Lyon Metal Products, Inc.,** 42 Plant Avenue, Aurora, Illinois.

Available in open type, closed type, bin type or counter high sections — also tool shelving. All sections are 3 feet wide, 1, 1½ or 2 feet deep, 7 feet high. Choice of green or gray baked enamel finishes. Accessories include shelf dividers, shelf boxes, drawer case units, mounting panels, drawer trays, tool inserts, etc.

Low Headroom Hoists

G-10 **Robbins & Myers, Inc.,** Hoist & Crane Division, Springfield, Ohio, has introduced a new line of Type F3 electric hoists available in capacities from 1½ through 7½ tons.

The new hoists require extremely low headroom. For example, the 5-ton model requires only 24 inches. Until now such low headroom has frequently required custom designed hoists.

Motor and control box on the hoists are totally-enclosed and weathertight. The addition of a simple, inexpensive diaphragm at the push button station makes the hoists suitable for outdoor use without the need of additional protection.

The new hoists are powered by a 7½ hp, 30-minute, 55 C rise, totally enclosed motor with weatherproof brake. This new, totally-enclosed, magnetic motor brake is the multiple disc type and has extremely short stroke travel to prevent peening. The brake may be adjusted externally without dismantling; only a wrench is required. There are no mechanical linkages. The friction discs are fitted to a splined hub for easy replacement and even distribution of the braking load. Brake coils cannot be overloaded nor the air gap increased excessively; thus the danger of coil burn-out is eliminated.

For More Free Data FILL IN CODE NO. on the Handy Return Card — Page 69

Automatic Carton Selector

G-11 An automatic carton selector to recognize any one of 7 separately printed codes is made available by **Atronic Products, Inc.** of Bala-Cynwyd, Pa. This new Model 405 applies to operations that do not require the selectivity of the Model 410, which can recognize any one of 31 separate codes.

Suitable for automatic sorting, counting, and inventory control of packaged goods on an assembly line or conveyor, the unit may be supplied with counter and memory device for control of conveyor or switches that may be activated by an output signal.

A self-contained light source illuminates a code printed on the carton so that it may be read by photocells. The code consists of three parallel bars that may be printed either on the side or top of the carton

Like the Model 410, the Model 405 is fully transistorized and of rugged construction for complete dependability.

Battery Powered Fork Trucks

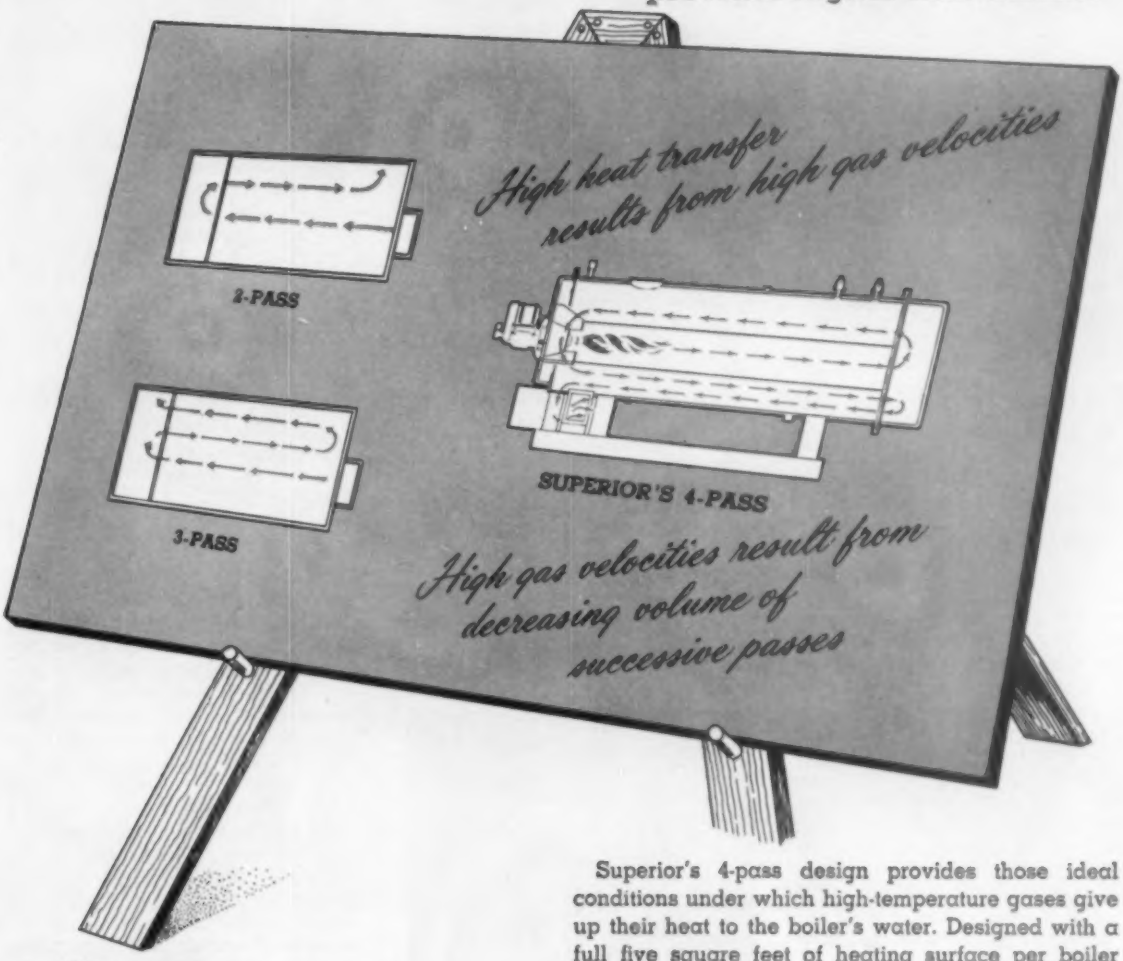
G-12 Three battery powered, low silhouette fork-lift trucks capable of double stacking freight in truck trailers have been introduced by the **Industrial Truck Division, Clark Equipment Company,** Battle Creek, Mich. An addition to the "Clarklift" line, the new trucks supplement the standard low silhouette trucks Clark has produced since 1951.

The fork trucks have a seat height of 34 inches and an overall height of 71 inches to the top of the overhead guard. This low silhouette, combined with Clark's carbon pile drive control which provides stepless acceleration similar to an automatic transmission, gives the machine the compactness and mobility needed to drive in and out of truck trailers safely with capacity loads. Free lift in the upright permits in-truck stacking as high as 51 inches in a 72 inch high trailer.

They are available in capacities of 2000, 3000 and 4000 lbs.

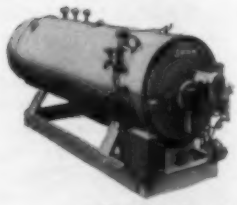
SUPERIOR'S 4-PASS DOWN DRAFT DESIGN

provides higher heat transfer


High heat transfer results from high gas velocities
2-PASS
3-PASS
SUPERIOR'S 4-PASS
High gas velocities result from decreasing volume of successive passes

Superior's 4-pass design provides those ideal conditions under which high-temperature gases give up their heat to the boiler's water. Designed with a full five square feet of heating surface per boiler horsepower, Superior boilers have reducing tube volume in successive passes. This reduced volume crowds the gases into intimate contact with the tube walls producing high velocities, and resulting in a continual scrubbing and cleaning action as the gases pass over the inner tube surfaces.

The down-draft arrangement of the 4-passes promotes the rapid steaming without surging, which results in dry steam . . . and in addition, this down-draft design traps the boiler heat during off periods, preventing its loss up the stack.



SUPERIOR "TYPE C"
PACKAGED BOILERS

Completely packaged fire-tube units for capacities from 20 to 350 bhp. Rotary burners on all sizes. Induced draft for clean, quiet safe operation. Fully insulated and ready for service burning oil, gas or both in combination. Pressures to 250 psi, or for hot water operation. Other fire-tube models for capacities to 600 bhp. Write today for Bulletin 15C.

Specialists in **PACKAGED BOILERS . . .** exclusively

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.

SUPERIOR
PACKAGED BOILERS

New Product Briefs (Continued)

Lift Trucks 10 to 12 Thousand Pound

G-13 **Hyster Company,** 2902 N.E. Clackamas St., Portland 8, Oregon, has introduced industrial lift trucks specifically engineered for capacities of 10,000 and 12,000 pounds.

Availability of the exclusive Dual-Range Power - Shift Hystamatic transmission is an important feature of the new Challenger 100-120 series. This job-tested transmission offers the advantage of no clutch pedal, effortless direction changes, and positive left-foot control of inching while the right foot maintains engine speed for fast lifting.

The power - shift transmission couples a torque converter with hydraulically-actuated engaging units. Selection of speed ranges is made by the operator, without de-clutching or stopping.

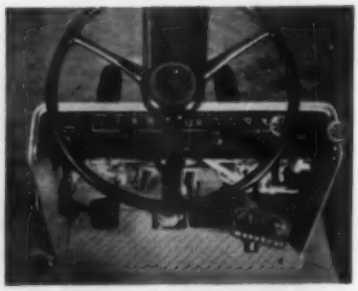
Feeder Kicker

G-14 A new electronic device that permits automatically controlled feeding of small to sub-miniature parts has been announced by **Affiliated Manufacturers, Inc.,** Oldwick, New Jersey. Known as a **Kicker,** this unit provides a means of continuously and automatically breaking up jams or inertia which often results from the interlocking of pieces with each other, the presence of dirt, dust, vapor film, static electricity, etc.

The kicker allows continuous feeding of miniature parts at rates slower than normally possible with standard amplitude settings suiting production line automation. The kicker supplies to the feeder an automatically timed and adjustable energy impulse different than the regular amplitude, jarring the parts into further movement.

On standard kickers these impulses are adjustable from 5 seconds to 60 seconds and in varying degrees of energy output as required by the nature of the pieces being fed.

By means of the kicker feeding speeds can be achieved as slow as one per minute if required. It also is effective at normal feeding speeds of 200 to 300 per minute. It also assists in the orientation and positioning of parts.



Lift Truck Control

G-15 **Hyster Company,** 2902 N.E. Clackamas St., Portland 8, Oregon, has announced a new Monotrol control system, which teams with the Power-Shift Hystamatic transmission.

In the Monotrol system, throttle and forward-reverse direction control are combined in one right-foot pedal to free the lift truck operator's hands for full-time steering and load handling control. Dashboard push-buttons for "park" and "drive" govern an automatic parking brake and engagement of the automatic transmission.

Other features of the Monotrol system include a safety starting switch, which permits engine starting only if the "park" button is down, and a left-foot inching-brake pedal. This allows the operator to control truck movement, yet keep his right foot on the throttle to maintain engine speed for fast lifting.

Magnetic Pulleys

G-16 An improved line of ceramic-powered, radially designed pulleys somewhat more powerful than those currently available, has been announced by **Eriez Manufacturing Company,** Erie 6, Pa.

The magnetic poles of the Alnico-powered pulley run parallel to the shaft, exerting a constant strength across the full width, while the Ceramic-V magnetic poles of the new pulley extend around the circumference resulting in a field that varies across the face, being most highly concentrated at the poles. Thus, in general, the Alnico axial pulley is most effective in removing small and medium tramp iron from material flows covering most of the belt width, while the deeper magnetic field of the radially designed pulley is found more effective in the removal of medium and large tramp iron, especially at higher belt speeds.

To assist customers in the selection and application of permanent magnetic pulleys, Eriez candidly points out the balancing limitations and advantages of each. For example, where the Alnico axial pulley operates effectively with a belt thickness not exceeding ⅝", the deeper magnetic field of the ceramic powered radial pulley is more effective on belt thicknesses considerably beyond that. On the other hand, the ceramic pulley is admittedly a more specialized piece of equipment. Belt speeds must be fairly fast to assure tramp iron discharge; optimum efficiency demands temperatures not lower than 20 F nor higher than 120 F; magnetism induced in the shaft is difficult to isolate from bearings and framework.

For More Free Data FILL IN CODE NO. on the Handy Return Card — Page 69

Who Discovers the Discoverers?

"A professor can never better distinguish himself in his work than by encouraging a clever pupil, for the true discoverers are among them, as comets amongst the stars." CARL LINNAEUS

Somewhere in this mighty land of ours, a gifted youth is learning to see the light of tomorrow. Somewhere, in a college classroom or laboratory, a dedicated teacher is gently leading genius toward goals of lofty attainment. Somewhere the mind of a future discoverer—in science, engineering, government, or the arts—is being trained to transcend the commonplace.

Our nation has been richly rewarded by the quality of thought nurtured in our colleges and universities. The caliber of learning generated there has been responsible in no small part for our American way of life. To our college teachers, the selfless men and women who inspire our priceless human resources, we owe more than we will ever be able to repay.

Yet how are we actually treating these dedicated people? Today low salaries are not only driving gifted teachers into other fields, but are steadily reducing the number of qualified people who choose college teaching as a career. At the same time, classrooms are beginning to get overcrowded. In the face of this, college applications are expected to double by 1967.

This is a severe threat to our system of education, to our way of life, even to our very existence as a nation. Our colleges need help—and they need it now!

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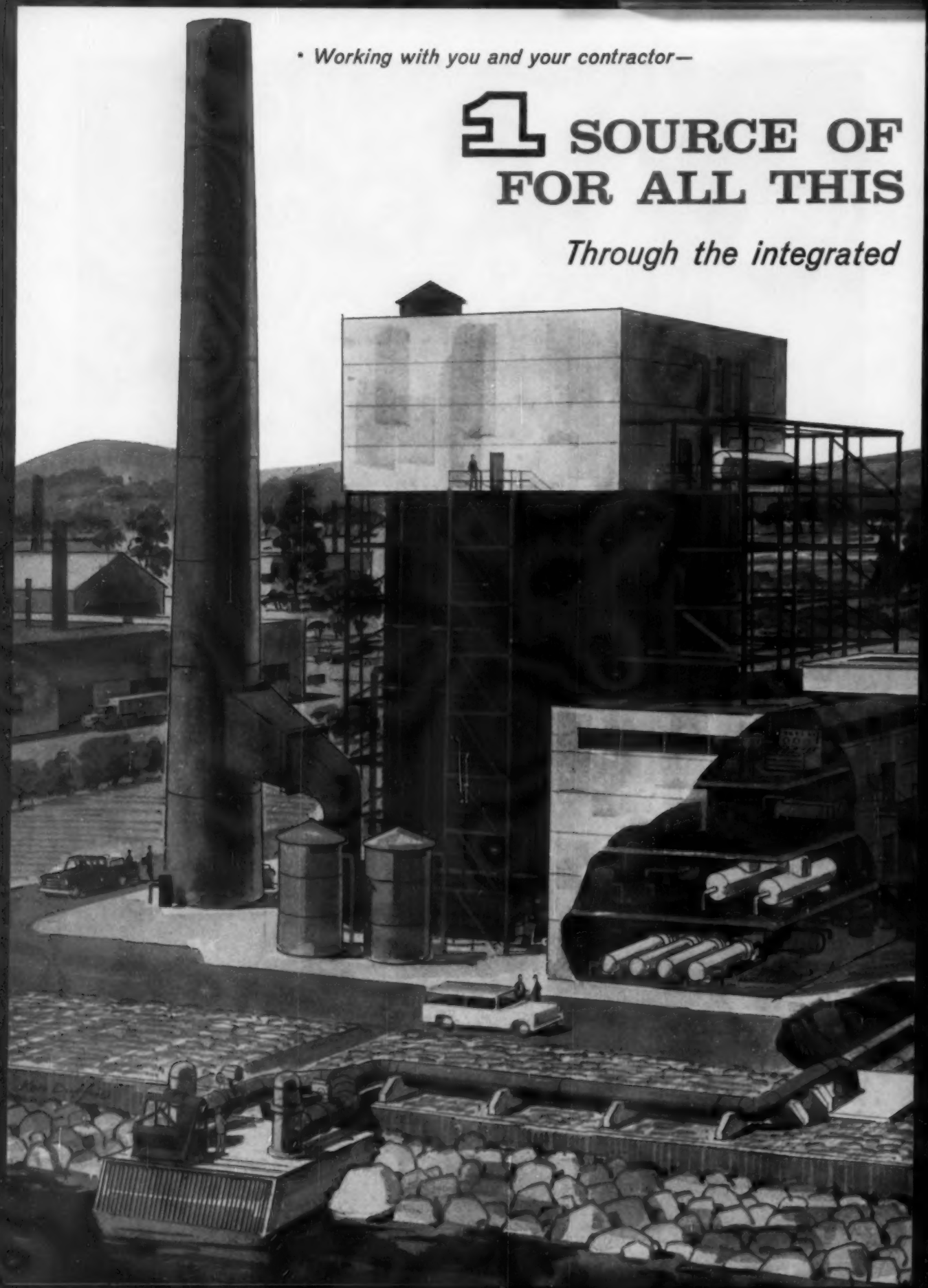

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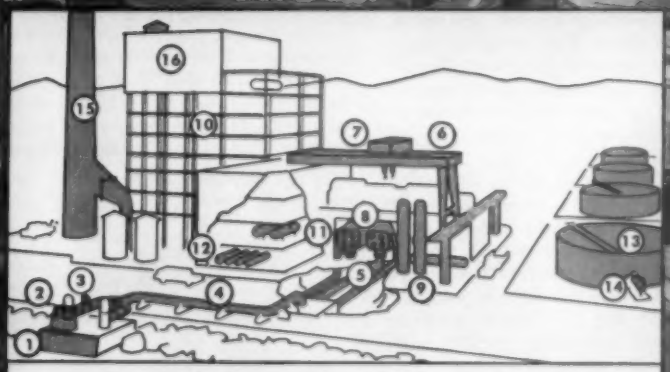

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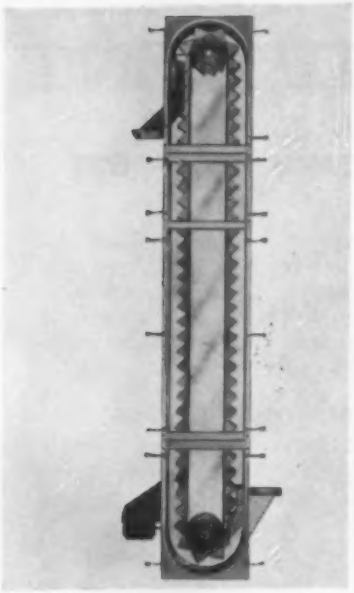
New Product Briefs (Continued)



Bucket Elevators

G-17 Two new series of continuous bucket elevators, known as the "VC" and "GC" Series, are offered by **The Bucket Elevator Company,** 360 Springfield Ave., Summit, N. J. Both types of elevators feature a continuous gravity discharge where the back of the preceding bucket acts as a discharge chute. This design permits maximum capacity at slowest speeds.

Both are available in stainless, galvanized or carbon steel construction, with capacities to 40 cubic feet per minute.

The "VC" Series offers exclusive cantilever design to meet municipal and industrial sanitary standards for easy cleaning and access to the interior. "GC" Series elevators are of more conventional design; soundly engineered for all general purpose applications requiring gentle handling of the product.

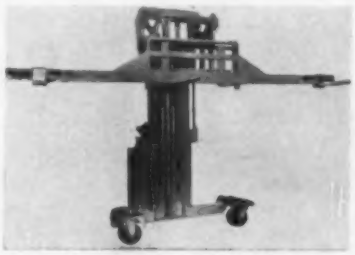
Non Rigid Belt Conveyor

G-18 A new non-rigid, non-spilling, portable belt conveyor with a broad range of industrial and agricultural applications has been introduced by **The Long Company,** Box 331, Oak Hill, W. Va. Designated the "Lo-Rope" it is said to provide large capacity, easy installation and low operating and maintenance costs.

An outstanding feature of the new conveyor is its exclusive "Lo-Rope" idler mounting with the idler positioned above the rope side frames. This type of mounting, automatically centers the load, eliminates spillage, and — combined with the deep 27 degree troughing of the belt itself — greatly increases its carrying capacity.

In addition, this design permits the economy of wider spacing between idlers. It also reduces maintenance and replacement costs by eliminating belt "scrubbing" caused by "toeing-out" of wing idlers in some types of non-rigid conveyors. This feature also contributes to belt portability and flexibility, which are important when the user wants to move belts frequently or run them up and down hills.

The belt is equipped with adjustable height platform rocker support stands for the rope, which minimize blocking and level the belt. Ropes, support stands and idler connections to the rope are completely out of the way of the carrying run, which further increases belt life by eliminating belt edge wear.



Fork Truck Carriage Extension

G-19 A new fork truck carriage extension for use with narrow aisle trucks has been designed by engineers of **The Raymond Corp.,** 90-175 Madison St., Greene, N. Y. It is designed for use with the company's "Four Directional" truck in order to permit long flexible loads to be handled faster and with greater safety.

With the new carriage arrangement most of the weight is carried by the main forks with the outer extension forks holding up the ends of the load to prevent dragging or swaying. The stabilizing extension forks are adjustable to a maximum width of 15'. The load stabilizer carriage hooks on to the standard fork carriage and may be easily removed when ordinary size pallet loads are to be tiered.

Use of the carriage extension allows the Four Directional narrow aisle truck to handle loads 15' or longer. In operation, the truck with its load across the forks moves down a wide main aisle and, when it reaches the narrow storage area, moves sideways with its load into an aisle that can be as narrow as 7 feet.

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Industrial Tractor

G-20 A new Yale Worksaver, rider-walkie, electric industrial tractor, developed by **Yale Materials Handling Division, The Yale & Towne Manufacturing Co.,** 11000 Roosevelt Blvd., Philadelphia 15, Pa., speeds operations economically through the provision of three speeds and a high top speed from a 12 volt electrical system.

Speeds of 5.6 mph in third speed are made possible with a 12 volt battery by the arrangement of a high speed, series-wound motor to provide for paralleling of the series field in third speed. The fields operate in series in the tractor's first two speeds

to provide maximum acceleration and instant power.

An additional advantage of this motor arrangement is the conservation of battery power it accomplishes in first and second speeds and lowered resistor heating, since this element operates only in first speed.

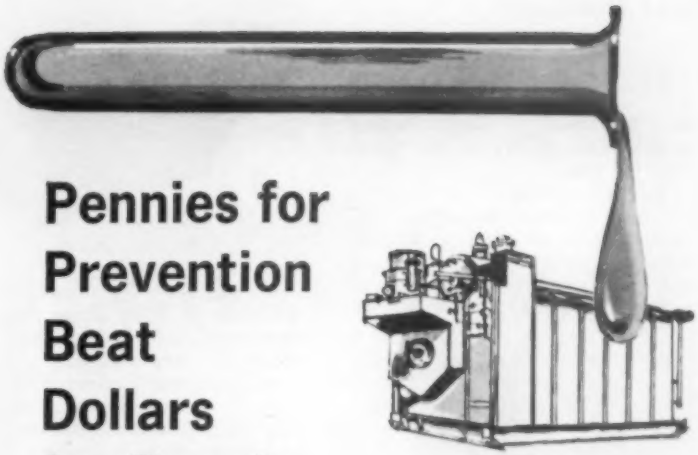
Dynamic braking is a standard feature. By this method, the operator of the truck need only lift his foot from a floor pedal and release the finger tip speed control to bring the unit to an immediate, smooth stop.

Leverage Wrench

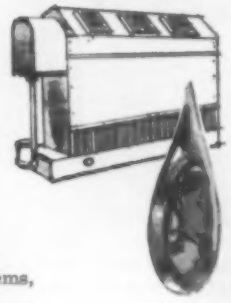
G-21 Compound leverage wrenches manufactured by **The Ridge Tool Company,** Elyria, Ohio, can tighten or loosen the stubbornest fitting with ease and complete safety. Working with compounded leverage, pressure applied on the extra-sturdy malleable handle is multiplied by two as the adjustable hook jaw turns the pipe in one direction, while the offset chain vise head grips the fitting and exerts an equal pressure in the opposite direction.

By slipping the removable chain vise head into place on the desired side of the handle, the compound leverage wrench can be used to tighten or loosen right or left hand threads . . . with the pipe on either side of the fitting. Short handle for jaw size makes it ideal for close quarters.

This wrench is indispensable for those hard-to-get-at, frozen joints. The first time used, a compound leverage wrench pays for itself by letting one man do the work of two. They are made with extra strong alloy tool-steel jaws and are available in four sizes for 2" to 8" pipe.



Pennies for Prevention Beat Dollars for Repair



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New Product Briefs (Continued)

Load Stabilizer

G-22 Load stabilizer attachment adapted for use with its low-lift "walkie" line has been developed by **Lewis-Shepard Products, Inc.,** 125 Walnut St., Watertown 72, Mass.

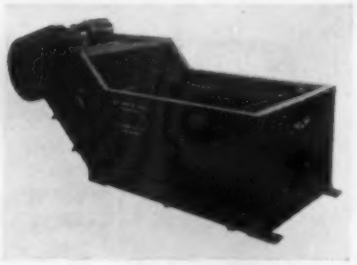
Designed primarily for handling skid loads of coated flat paper stock, which have a tendency to ride off skids and pallets, the stabilizer is also recommended for all types of loads that are not stable.

The stabilizer is hydraulically operated from the operating handle and clamps down on top of the load. Various clamping heights may be furnished to suit the height of the load by the adjustable top clamp arm.

Sponge lined pads clamp safely down on any material and hold firmly in place while the load is transported. This feature is extremely practical when traveling over slanted ramps with fragile or slippery loads.

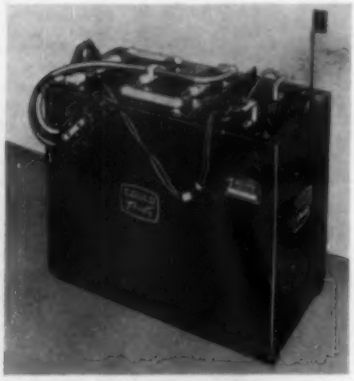
Separator for Ferrous Solids

G-23 A new compact Magnaflo Separator unit for the automatic removal of ferrous solids from cutting oils and other soluble coolants is now available from the **U. S. Hoffman Machinery Corp.,** Dept. LR, Thompson Rd., Plant No. 1, Syracuse, N. Y. According to a descriptive brochure just released, the Hoffman Magnaflo Separator is fully automatic, operates without attention and is virtually free of maintenance expense for the life of the equipment. Self-cleaning, it elimi-



nates the need for sump cleaning, changing of filter paper, bags or cartridges, and delivers near dry sludge for easy disposal.

The separator consists of only four parts — a tank, magnaplate, baffle and sludge scraper mechanism. These are combined to utilize the known effectiveness of magnetic force for the removal of ferrous solids. Designed for flow rates from 40 to 1,000 gpm, it covers a wide range of applications from individual machine tools to centralized systems for large groups of machines.



Compact Charging

G-24 A new "Fulpowr" power package for electric hand truck service that provides convenient, automatic self-contained charging for more efficient material handling has been introduced by the Industrial Division of **Goulds-National Batteries,** Trenton, N. J.

Available in 12 and 18 volt assemblies the Gould "Fulpowr" is a complete power package comprised of battery and charger for all types of electric hand trucks. All battery dimensions are standard and the battery can easily be charged without removal from the truck.

The small Silicon type "Fulpowr" charger is designed for various size batteries. The charger is available in single phase 120 or 240 volt, 60 cycle a-c service that can be plugged into any standard outlet.

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Fork Carriage

G-25 A quickly interchangeable standard lift truck fork carriage to increase the versatility of application of Yale industrial tractor shovels has been introduced by **Yale Materials Handling Division, The Yale & Towne Manufacturing Co.,** 11000 Roosevelt Blvd., Philadelphia 15, Pa.

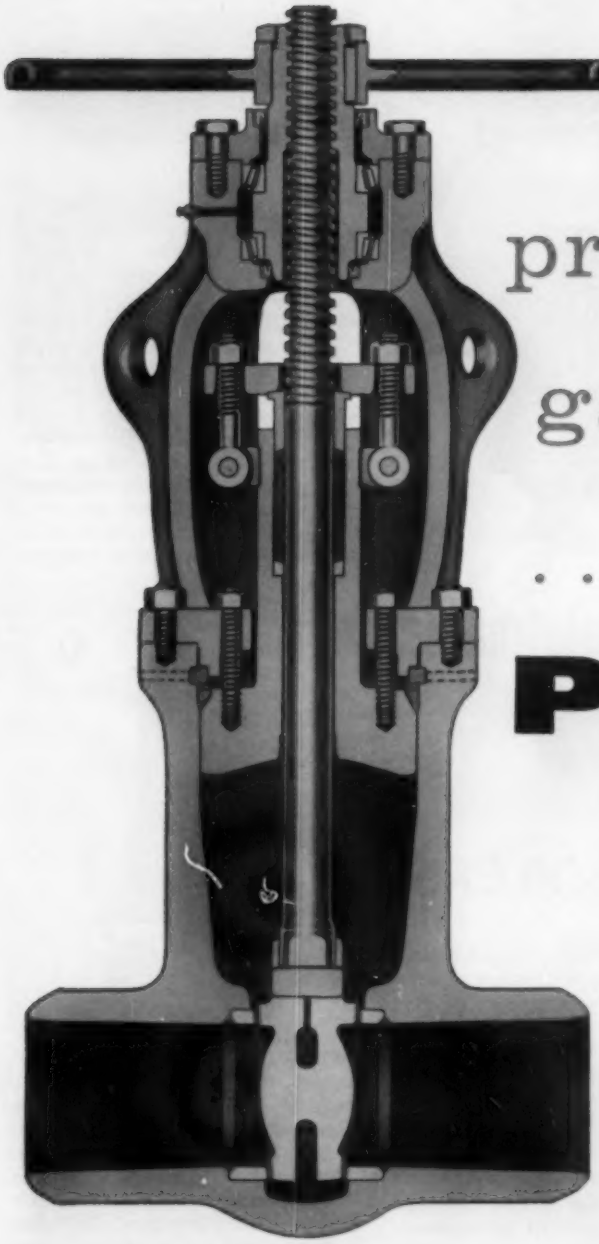
A special fork carriage can be easily installed on the standard Yale Y-18 Tractor Shovel through the removal of four pins and four bolts to replace the bulk handling unit with the pallet handling device.

The front plate of the tractor shovel carriage is built to Industrial Truck Association standards for carriages on 2000 and 3000 pound capacity lift truck.

Teflon-Coated Cups

G-26 The development of Teflon-conted cups for use in hydraulic and pneumatic equipment has been announced by **The Garlock Packing Company,** 430 Main St., Palmyra, New York.

Teflon-coated cups reduce the breakway torque required to operate cylinders; reduce running friction; will not stick to cylinder walls even after prolonged periods of idleness; and eliminate packing chatter and squealing.



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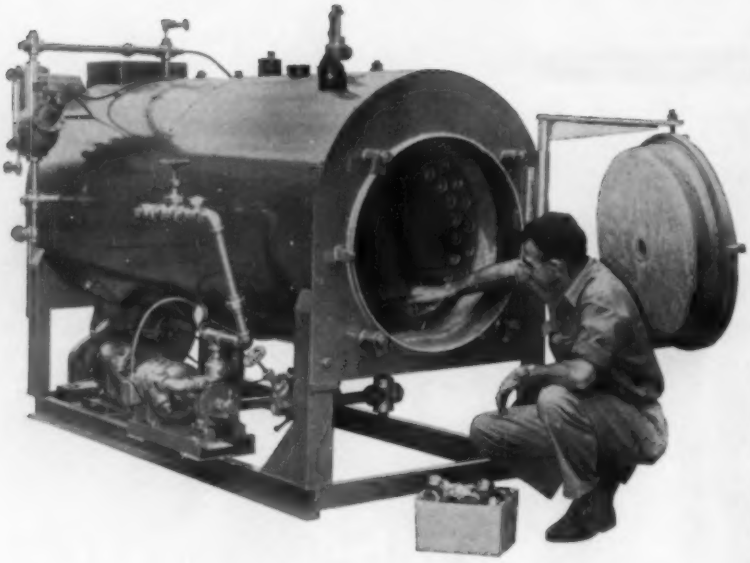

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New Products (Cont.)

Air Pressure Regulators

G-27 New, small pressure regulators, only 3 1/32" high by 1⅜" hex., for air, water and non-corrosive gases and liquids, are now available in ⅛" and ¼" N.P.T. pipe sizes from the **C. A. Norgren Co.**, Englewood, Colorado.

The new Series 20AR Regulators handle air flows up to 20 cfm at 100 psi air pressure and provide reliable pressure regulation even with widely fluctuating line pressure and rapidly varying air flow. They can be used at a maximum primary pressure of 400 psi and a maximum delivery pressure of 100 psi. Maximum operating temperature is 200 F.

The regulators feature a brass bonnet and body, nylon-reinforced Buna N diaphragm, Buna N seat, hand-removable bonnet, in-line pipe connections, and can be serviced without removing from the air line. The regulators are highly adaptable to job requirements — furnished with or without a ⅛" N.P.T. gauge port; 1½" diameter, 160 psi capacity back-mounted pressure gauge. For left-to-right or right-to-left air flow. Panel or bracket mounting available.

Narrow Aisle Truck

G-28 An entirely new Heavy Duty 4000 lb Capacity Narrow Aisle Electric Truck has been announced by **The Raymond Corp.**, 90-174 Madison Ave., Greene, N. Y. The new model is powered by a 24 volt electrical system.

The use of rugged components,

compactly arranged in the drive unit assembly, makes it possible to meet the performance requirements of large counterweighted trucks while enjoying the space saving features of narrow aisle units. For example, the new truck has two drive motors directly coupled to the large steerable wheels.

Each of the drive motors has only one gear reduction yet four separate speeds are provided for both forward and reverse movement. The control of speed is obtained by varying the connection of the motors between series and parallel circuits to eliminate the power loss normally dissipated by resistors.

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Space Filter

G-29 Designed for economical and highly efficient air filtration in many industrial and commercial fields, the Dustfoe Space Filter has just been introduced by **Mine Safety Appliances Company**, Pittsburgh, Pa.

In an atmospheric air dust stain test of the Bureau of Standards, the filter is rated 85 to 95 per cent effective.

The filter element — framed with waterproofed, non-combustible fiber board — is a honeycomb, folded blanket of non-combustible fibers held by fire retarded woven webbing that covers an effective area of 80 sq ft.

There are no high voltage power packs or other electronically or mechanically complicated parts associated with the filter. It can be replaced quickly and economically when dust build-up increases resistance to the throw-away point. The disposable feature eliminates time-consuming repacking and folding.

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2—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control & distribution systems, etc., at a cost less than 1% of value of equipment. — Atlanta office of WESTINGHOUSE ELECTRIC.

13—Conveyor Belt Repairs — Bulletin R-700 and Folder R-4 describe the "Rema" method of making vulcanized repairs without heat. Holes, gouges, rips and tears can be repaired on the job. Curing time delay is eliminated. Belts can be put into service immediately after repair is made. — FLEXIBLE STEEL LACING COMPANY.

14—Triple-Purpose Gun — Low-cost Carco Gun ($16.50) described in form C-100; ideal for fast, efficient sand blast, liquid, or air cleaning of small parts and surfaces. Operates on any standard air pressure system. — C. A. ROESCH & CO.

17—Mechanical Packings — 32 p Cat. PC-103 describes a variety of packings & gaskets, including self-lubricating, sheet and molded packings, etc. Includes application charts and price information. — GREENE, TWEED & CO.

29—Belting Repairs — Two bulletins "How to Properly Join Belts" and "Belt Fastener Selection Chart" offer service help on conveyor, elevator and transmission belting. — CRESCENT BELT FASTENER CO.

32—Scale Removal — Data sheet on Kwik-Kleen, a completely safe method of rapid scale removal for heat transfer surfaces.—THE NORTH AMERICAN MOGUL PRODUCTS COMPANY.

96—Tube Cleaners — Mechanical units for boilers, condensers, evaporators and pipes described in Catalog 77A. Over 100 pages of air motors, cutting heads, drills, etc. — THOMAS C. WILSON, INC.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

107—Proportioning Pumps—4 p brochure illustrates and describes company's proportioning pumps and package chemical feeding units. Includes applications and specifications. — BIRD ARCHER CO.

123—Slurry Pump — Catalog describes the new SP-90 slurry pump which permits proportion of slurries in the mix tank to remain constant, with pumping rates variable from maximum of 1/5 of maximum. — MANZEL.

142—Centrifugal Pumps — Full line of single stage horizontally split case centrifugal pumps described in 16 page Bulletin 721.6; capacities 200-6400 gpm; heads up to 425 ft; maximum standardization and interchangeability of parts.—GOULDS PUMPS, INC.

160—Boiler Feed Pumps—12 p Bulletin 122 describes and illustrates the type BFI high pressure pumps. Design features, service ratings and engineering data included.—PACIFIC PUMPS, INC.

165—After Cooler — Bulletin 130 shows how the Aero unit removes moisture from compressed air or gases; cools water for jackets and intercoolers; cools air or gases in both power and process systems; and protects air tools and pneumatic systems from water damage.—NIAGARA BLOWER COMPANY.

INSTRUMENTS—METERS CONTROLS—REGULATORS

200—Control Centers — Built to specific needs of the job to prevent costly breakdowns later. Units custom-built from best components. Specializing in quick deliveries. — THOMAS B. COMBS COMPANY.

213—Meters & Controls — Bulletin G15-1 describes and illustrates systems and instruments used in the measuring, transmitting, receiving, interpreting and controlling of 18 variables normally encountered in power plant and industrial plant operation. — BAILEY METER COMPANY.

225—Cooling Controls — Self-powered controls for compressors, stills, solvent coolers, degreasers, small engines, etc., described in Bulletin 710; operational and hook-up sketches.—SARCO COMPANY INC.

231—Control Valves — Catalog No. 305 illustrates and describes construction and specifications for a wide line of air operated diaphragm control valves suitable for the majority of general process applications and plant services. — MASON-NEILAN.

234—Soot Blowing Control Systems —16 p Bulletin 1029 describes line of systems. Gives complete engineering description and illustrations of Selective-Sequence and Automatic-Sequential insert-type panel controllers. List of typical installations show a wide variety of applications. — COPES-VULCAN DIVISION.

258—Temperature Regulators — Bulletin 5307A describes temperature regulators that vary the flow of steam or cooling water to heater or process to automatically maintain constant temperature. Includes sizing and capacity data.—LESLIE CO.

299—Boiler Control Systems — GPS-901 describes power, steel, marine and industrial boiler control systems and components. Also temperature and process control systems. Water treatment chemicals, boiler compounds and inhibitors for industrial and municipal purposes. — HAGAN CHEMICALS & CONTROLS, INC.

265—High Pressure Water Columns — Brochure BO—Intro to high pressure (251 to 2500 psi div. of catalog data. Describes construction of higher pressure water columns; gives reference list of gages and sup-

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Bulletins (Cont.)

plementary equipment. — RELIANCE GAUGE COLUMN CO.

287—Color-Port Water Gage — Bulletin WG-1814 describes the new gage for high pressure boilers (up to 3300 psi). Gives full details on design and operation and shows how it gives greater visibility and greatly reduced maintenance requirements. —YARNALL-WARING COMPANY.

PLANT CONSTRUCTION—WELDING EQUIPMENT—SPECIALTIES

300—Fact Folders — 23 up-to-date industrial fact-file folders on aluminum, steel, copper, stainless steel, insulation, roofing and other industrial supplies immediately available from 9 Southern warehouses. — REYNOLDS ALUMINUM SUPPLY CO.

301—Vacuum Cleaning Systems — How portable and stationary systems cut costs and increase plant efficiency shown in Booklet P8 and AB-100. Eight heavy duty units (1½ to 15 hp) for cleaning hard to get at areas, reclaiming valuable materials, etc. — U. S. HOFFMAN MACH. CORP.

308—Wrought Iron in Steam Condensate Lines — Special report contains information on factors affecting corrosion, comparative service records, suggestions for minimizing maintenance. — A. M. BYERS CO.

313—Ice Making Machine — Packaged unit ideal for remote locations in sizes from 150 lb/day to 2000 lb/day; choice of electric motor or gasoline engine drive. — EQUITABLE EQUIPMENT CO.

323—Mercury Vapor Fixture — Industrial color corrected units described in Bulletin 401. "Stabilux Socket" secures bulb end of lamp, eliminating lamp rupture and breakage from vibration. — WIDE-LITE CORP.

324—Painting New Plants — "Plan Painting of New Plants to Reduce Costs" describes how company's lead-suboxide paints can save 1 or 2 coats of paint on new plants. Eventual repainting costs are cut as well since these paints for a dense, metallic lead film which can be recoated without expensive scraping, sanding or repriming. — SUBOX INC.

334—Storage Racks — Bulletin 17SP shows how Rackmaster Fittings cut rack-building time as much as 60% by eliminating threading and welding. Pipe 100% salvageable. — THE HOLLAENDER MFG. CO.

335—Classifying Systems — Bulletin explains general operating characteristics of centrifugal and gravitational type classifiers. Curves illustrate high efficiencies achieved in actual installations and indicate particle size distribution of incoming feed, separated fines and coarse material. — BUELL ENGINEERING CO., INC.

336—Retaining Walls — Catalog RW 3555 shows how bin-type walls stabilize slopes and gain valuable ground for buildings, parking areas; all metal cellular construction; all-bolted assembly means small crews can do the job. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

342—Power Roof Ventilators — Bulletin 550 describes V-belt driven centrifugal type power roof ventilators. Pressures to 2" SP; capacities from 1500 to 26,500 cfm.—CLARAGE FAN CO.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings" — low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. — ATLANTIC STEEL COMPANY.

PIPING—VALVES—FITTINGS STEAM SPECIALTIES—TRAPS

406—Blow-Off Valves — Catalog B-434 describes the valve to use for boilers to 2500 psi. Disc has welded-in stellite facing and inlet nozzle has integral welded-in heavy stellite seat. — YARNALL-WARING COMPANY.

411—Steam Trap Book — 44 page Steam Trap Book contains useful data on trap sizing, calculation of condensate loads, installation and maintenance data. — ARMSTRONG MACHINE WORKS.

420—Valves — 24 page Catalog illustrates and describes bronze, iron, steel and corrosion-resistant valves for controlling the flow of water, oil, gas, steam and corrosive fluids. — THE WM. POWELL CO.

426—Pressure Regulating Valves — Standard line of regulating valves for steam, water and air service described in Cat. 77. Complete specification data. — MASON-NEILAN DIV.

437—Piping for Permanence—Bulletin covers a variety of services where wrought iron pipe saves because it serves longer. Corrosion costs you more than wrought iron. — A. M. BYERS COMPANY.

448—Steam Trap Troubles — Booklet for plant engineering personnel "Banish Your Steam Trap Troubles." —YARNALL-WARING COMPANY.

468—Steam Traps—40 p engineering manual aids engineers and maintenance men in sizing, specifying and buying of steam traps and other fluid specialties. All data necessary to engineer a trap installation is included. — V. D. ANDERSON CO.

471—Pipe — Catalog 575C lists specifications for all sizes of pipe from ⅛ in. to 24 in. in diameter. Tables give data and description, wall thickness and weight. Also describes company's pipe fabrication facilities for structural uses. — L. B. FOSTER CO.

479—Multiport Drainers — Publication 5201 containing 8 pages describes units for removing large quantities of condensate under vacuum or pressures, as from evaporators, heaters, separators, coils, or steam lines (up to 200 psi maximum). Lists discharge capacities, shows features and typical installations. — COCHRANE CORPORATION.

BOILERS—STOKERS TURBINES—BURNERS

504—Steam Generators — Bulletin AXY - 1 describes auxiliary equipment and design features of the Amesteam Generator for sizes 10 through 600 hp and illustrates how this integrated design reduces cost and increases life and reliability. — AMES IRON WORKS, INC.

509—Free Coal Counseling — General information on how Coal Bureau engineers will advise on selection, transportation and utilization of the right coal for your purpose.—NORFOLK AND WESTERN RAILWAY.

510—Vibra-Grate Stoker — Water-cooled vibrating grate stoker in sizes from 25,000 to 150,000 lb of steam per hour; no dust collector required and assures freedom from smoke, even at low ratings; easily adapted for burning gas or oil in combination with coal, or singly; requires minimum maintenance. — AMERICAN ENGINEERING CO.

515—Packaged Steam Generators — Bulletin PSG-2 describes factory assembled portable type units from 10,000 lb/hr to 40,000 lb/hr capacities. Gives construction details and dimensions. In standard pressures of 175,250 and 375 psi gauge. — HENRY VOGT MACHINE CO.

Bulletins (Cont.)

516—Small Boiler Performance — 4 p Bulletin shows how the packaged Ljungstrom air preheater boosts performance. Boilers as small as 25,000 lb/hr can have advantages of regenerative preheating—saves fuel, boosts output, and permits use of lower grade fuels. — THE AIR PREHEATER CORPORATION.

523—Soot Blowers—Bulletin 1030 describes Vulcan T-30 retractable soot blowers, available in lengths up to 38 ft. Includes sectional drawings and special design features. — COPES-VULCAN DIVISION.

530—Coal Plant Specifications — 64 page brochure, including 5 drawings, is a comprehensive guide for preparing specifications on coal-fired, low-pressure heating plants in the size range of 750,000 to 5,500,000 Btu/hr. All aspects affected by choice of fuels from storage bin to stack design covered fully. — BITUMINOUS COAL INSTITUTE.

531—Fuel Oil Treatment — Data sheet describes how Mogul treatment disintegrates, dissolves and disperses sludge in fuel oil storage tanks and equipment. Thru sludge dispersal, maximum vaporization and combustion are possible. — THE NORTH AMERICAN MOGUL PRODUCTS COMPANY.

535—Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions. — CLEAVER-BROOKS CO.

545—No. 6 Oil Burner — Low pressure air atomizing burner, described in Bulletin AD-158, is rated at 90 gph. Components include latest type of combustion controls. — CLEAVER-BROOKS COMPANY.

549—Firing Systems — Folder No. 5843 describes industrial packaged forced-draft firing systems for dual-fuel or single-fuel firing of high or low pressure natural, LP or manufactured gas or any grade of oil from No. 2 thru No. 6 in Scotch marine, steel firebox, water tube or cast iron boilers. Illustrated.—IRON FIREMAN MFG. CO.

551—Packaged Water Tube Boilers — Complete data and dimensions for boilers ranging from 8,000 to 50,000 lb/hr, firing oil or gas or both, described in 12 p Catalog 111-D. — SUPERIOR COMBUSTION INDUSTRIES, INC.

566—Packaged Combustion Unit — Completely piped, wired and tested factory assembly described in Bulletin B8/30. Has Kinetic gas burner, manual firing valve, automatic diaphragm gas valve and electronic combustion safeguard system incorporating RA680 cabinet. Available in 3 sizes with 8 capacities from 800,000 to 3,260,000 Btu/hr. — WEBSTER ENGINEERING CO.

570—Seamless Boiler Tubes — 44 page Bulletin 12 contains complete description of manufacture, advantages, tolerances, allowable stress and working pressures, bursting strength, weights, steam properties and other data. — NATIONAL TUBE DIV., UNITED STATES STEEL CORP.

KEEP-UP-TO-DATE
USE SPI
READER SERVICE

574—Packaged Generator — Bulletin 582 describes Vapormatic Coil-N-Shell Steam Generator for service requirements of 5 to 150 psig. Gives operation features and specification data. Available with gas, oil, and combination gas/oil fuel systems. — TEXSTEAM CORP.

586—Boiler Controls — Bulletin C1 describes automatic combustion controls for gas fuel firing of boilers of all sizes. Complete pneumatically powered systems of both the positioning and proportioning type are illustrated. — WEBSTER ENGINEERING CO.

ENGINES—DRIVES
POWER TRANSMISSION
MATERIAL HANDLING

601—Crane Runway Rails — Catalog gives information on crane rails, angle bars, crane stops, rail clips, hook and anchor bolts, bearing plates. Also specifications on various sizes of crane rail clips and explains how to order rails. — L. B. FOSTER CO.

602—Pneumatic Ash Conveyors — Bulletin S57-A describes pneumatic ash conveyors for rugged, wear-resistant pipe and fittings that provide lower maintenance cost per ton of ash covered. — NATIONAL CONVEYORS CO. INC.

603—Monorail Case Studies — File F-1 — Offers 20 new studies of engineered monorail applications in various industries. Factual information, complete with photos and plain drawings. — AMERICAN MONORAIL CO.

607—Crane Systems — Booklet 2008, profusely illustrated, shows how Tramrail transfer cranes can systematize handling; engineering and application data. — CLEVELAND TRAMRAIL DIV.

614—Vertical Transportation — Elevator Catalog — Describes and illustrates details of passenger and freight elevators, escalators, dumbwaiters, and modernization and maintenance equipment for use in industrial, utility and service plants. — OTIS ELEVATOR CO.

630—Mechanical Vibrating Conveyors — Catalog 890 gives information on conveyability and density of typical solid materials and provides data on how to "Do It Yourself" to get required length. — JEFFREY MFG. CO.

633—Shielded Electrification—Bulletin KS-1 describes "Kant Shock" for monorail and crane systems. Shielding prevents accidental contact with live bus bars. Eliminates all hazards of open bar conductors, prevents costly accidents, protects employees and reduces insurance rates. — AMERICAN MONORAIL CO.

639—Diesel Engines — 16 p Catalog BU-413 describes two new diesel engines — Model D-344 and D-516. Includes photographs, cutaways, charts and other illustrations. — ALLIS-CHALMERS MFG. CO.

640—Belt Conveyors — Manual 909 designed to serve both expert and layman in field of materials handling by conveyor. All but the most unusual applications can be specified from the contents. — JEFFREY MFG. CO.

WATER TREATMENT—HEATING & AIR CONDITIONING—DUST & FUME CONTROL—REFRIGERATION

706—Automatic Roof Cooling — Bulletin shows how automatic evaporative roof cooling can reduce inside temperature 8 to 15° without air conditioning; increase roof life; and reduce fire hazards. Many Southern installations. — APRIL SHOWERS — SOUTHERN.

711—Refrigeration Condensers—Bulletin RC-2 shows how Vogt condensers step up rate of heat transfer and step down head pressures. Closed type for clean waters; film type where water is hard and forms scale. Units save power and refrigeration cost.—HENRY VOGT MACHINE COMPANY.

716—Dust Collection — Whether nuisance elimination or process material recovery, check on Whirlex

Dust Collector Units. Engineering data available. — THE FLY ASH ARRESTOR CORP.

718—Zeolite Softeners — 20 p catalog 4520 describes the sodium zeolite softening process in detail. Contains data required for proposals, lists factors important in selection of proper zeolite material and in sizing of equipment. Single valve controls all cycles of service and regeneration. — COCHRANE CORPORATION.

722—Packaged De-Ionizers — Bulletin PK describes complete line of de-ionizers, which produce chemically pure water at flow rates up to 1000 gph. Standardized units, shipped from factory fully-assembled, eliminating complicated installation problems, and virtually eliminating service problems. Recommended for laboratory and plant production uses. — ILLINOIS WATER TREATMENT COMPANY.

729—Refrigerant Condenser — Bulletin 131 shows benefit of panel construction in condensers with capacities from 100 to 240 tons refrigeration. Illustrations, diagrams and photos explain functions of aero-evaporative condensers with Duo-pass precooling coil and oil remover. — NIAGARA BLOWER CO.

755—Cooling Tower — Bulletin DVAQ describes the double-flow Aquatower for industrial services involving intermediate-gallonages. Space saving line in wood or steel structure with asbestos cement board casing, in single or multi-cell units. — THE MARLEY COMPANY.

768—Steam Humidifiers — 16 page Bulletin No. 500 shows necessity of humidification, lists recommended storage and processing temperatures and relative humidities, lists regain of hygroscopic materials and complete physical details of all types of Armstrong steam humidifiers. — ARMSTRONG MACHINE WORKS.

774—Refrigerating Units — Bulletin 97-F, illustrates and describes low-pressure refrigerating units. — FRICK CO.

ELECTRICAL

801—Motors—Bulletin describes and catalogs more popular a-c motors from 1 to 600 hp, for every process and manufacturing requirement. Single phase and polyphase; surpass NEMA specifications. — BROOK MOTOR COMPANY.

802—Small Relays—Simple solenoid design with only one moving part described in Bulletin 700. Silver

DON'T OVERLOOK THIS COST SHEET!

YOU CAN REDUCE MANY OF THESE COSTS!

By having the refrigeration system designed to meet your specific requirements and by buying the entire system of equipment from a manufacturer with a background of experience and reputation in this highly specialized field.

Frick Company has been designing, manufacturing, and installing commercial and industrial refrigeration systems since 1882.

Whatever type you need—cold storage, ice making, air conditioning, quick freezing, very low temperature, or process cooling—Frick engineers will design a system to serve you with dependability and economy.

Let FRICK ENGINEERS Provide a Frick System for You Today.....

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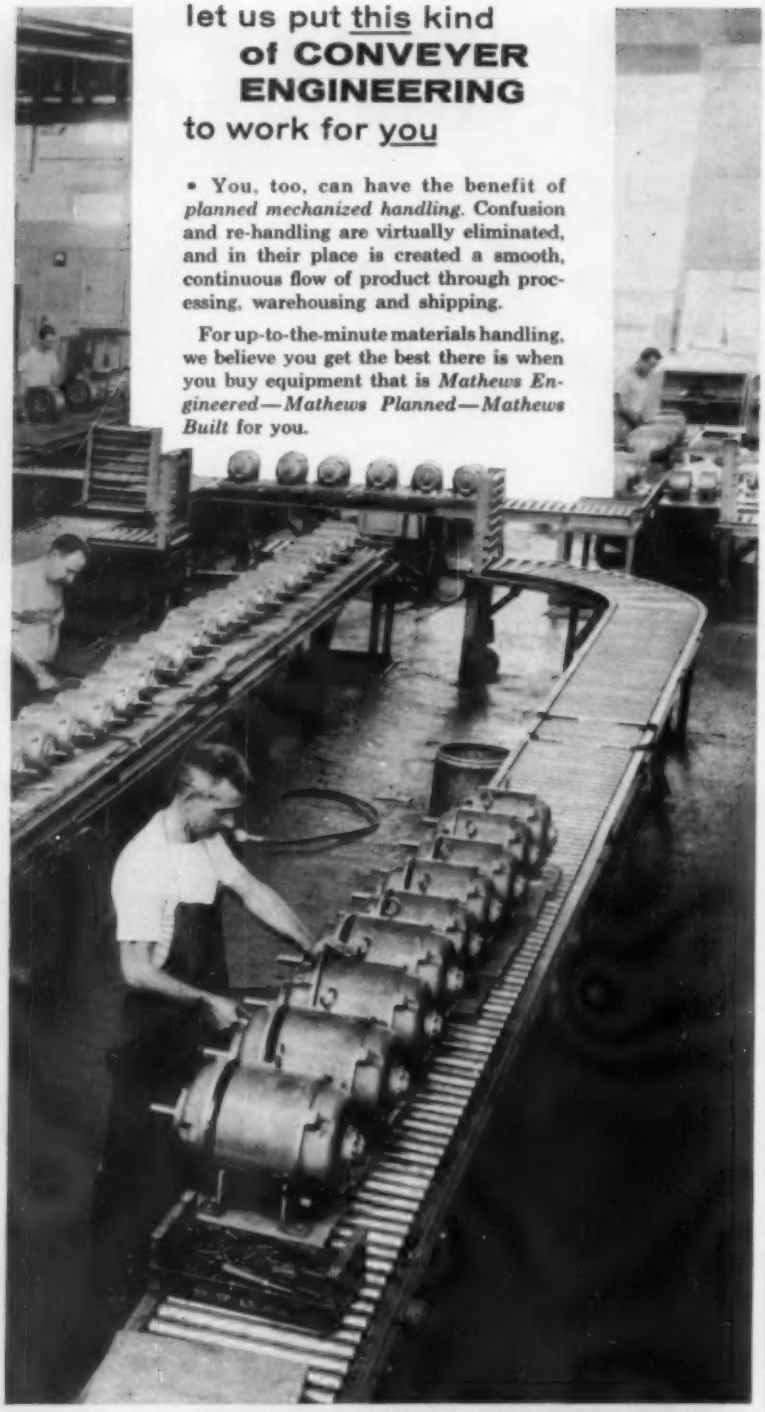
DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA., U.S.A.

For more information, use Reply Card—Page 69



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ENGINEERING
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• You, too, can have the benefit of *planned mechanized handling*. Confusion and re-handling are virtually eliminated, and in their place is created a smooth, continuous flow of product through processing, warehousing and shipping.

For up-to-the-minute materials handling, we believe you get the best there is when you buy equipment that is *Mathews Engineered—Mathews Planned—Mathews Built* for you.

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GENERAL OFFICES . . . . . ELLWOOD CITY, PENNSYLVANIA
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CANADIAN DIVISION . MATHEWS CONVEYER COMPANY, LTD., PORT HOPE, ONTARIO.

MATHEWS
Over Fifty Years of Leadership in Mechanized Handling

alloy contacts need no cleaning, filing, or other maintenance. — ALLEN-BRADLEY CO.

805—Power Factor Correction — 24 page catalog 50B shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transformer and switchgear costs can be greatly minimized in new installations. — SPRAGUE ELECTRIC CO.

812—Open-Type Motors — Bulletin 05-51B9040 describes "Super-Seal" open-type motors which are unaffected by moisture, dust, dirt, oils, acids and alkalies. Motors have a 1.15 service factor which frequently permits using a smaller motor size. — ALLIS-CHALMERS MANUFACTURING CO.

819—Plug-In Power Distribution — 24 p Book GEA-6173 describes 225-1000 amp plug-in Flex-A-Power busway with aluminum conductors. Lists features, applications, ratings, construction and installation information and specifications. — GENERAL ELECTRIC CO.

839—Power Transformers — 8 p Booklet B-7299 "Preventive Maintenance of Power Transformers Through Modernization" includes component replacement descriptions, adaptions and methods of oil preservation. — WESTINGHOUSE.

842—Circuit Protection — Bulletin FIS describes the maintenance free Fusetron fuses which protect motors, solenoids, coils and transformers against burnout, and which increase production by eliminating needless blows.—BUSSMANN MFG.

855—Wiring Analyzer — 4 page bulletin describes Model 301 Adequate Wiring Analyzer which quickly, simply and easily tests wiring without confusing calculators or slide rules. — SPRAGUE ELECTRIC COMPANY.

879—Commutator Maintenance — 27 page booklet B-6150-A contains information on brush and commutator maintenance. Includes maintenance requirements, factors affecting commutation and carbon brush materials. — WESTINGHOUSE ELECTRIC CORP.

884—Portable Cords — Bulletin covers complete new line — Securityflex cords for severest applications; Industrial "all-purpose" cords for hard usage; and Service cords for shop appliances. — ANACONDA WIRE & CABLE CO.

U-1 — Electric Truck — Bulletins 6226 & 6248 cite ability of lead-battery-powered industrial trucks to get 20-30% more work done and gives curves measuring and recording performance of 6000 lb electric fork truck with 500 ampere-hour rating.—EXIDE INDUSTRIAL DIV., ELECTRIC STORAGE BATTERY CO., Rising Sun & Adams Ave., Philadelphia 20, Pa.

U-2—Screw Conveyor Drive — 16 p Bulletin A667C describes screw conveyor drive complete with speed reducer, packing gland and drive shaft — all of which mount as a unit on a trough end. Includes photos, engineering drawings with dimension, prices and selection tables. — DODGE MFG. CORP., Mishawaka, Indiana.

U-3—Warehouse Processing — Bulletin 502-1 points out how a major drug company maintains a standing inventory of over 15,000 different items, handles warehouse processing smoothly, and combines receiving and shipping operations. — LEWIS-SHEPARD PRODUCTS, INC., 125 Walnut St., Watertown 72, Mass.

U-4—Sling Chain Maintenance — 12 p booklet "Vital Links To Safety" crystalizes the fundamental safety cautions that need to be followed to insure maximum chain safety. Includes chain safety terms, proper use of chain, safety cautions, proper inspection, and working load limits. — THE McKAY CO., 1005 Liberty Ave., Pittsburgh 22, Pa.

U-5—Motor Driven Cranes — 8 p Bulletin DH-227-B describes Type B-516 underhung, single bridge, motor-driven cranes in capacities of 1 to 10 tons, spans up to 50 ft and speeds of 75, 125, and 175 fpm. — AMERICAN CHAIN & CABLE CO., INC., 929 Connecticut Ave., Bridgeport 2, Conn.

U-6—Coal Conveyor — Data sheet describes the Type C fully enclosed and pre-assembled flight conveyor for coal handling. Various combinations of prefabricated sections are adaptable to any length, profile or type of coal handling service. — DANIELS CO., 22 North Fifth St., Indiana, Pa.

U-7 — Aluminum Elbow — Data Sheet illustrates and describes the humped aluminum elbows which protect insulation at turns and automatically compensate for pipe expansion and contraction and for differences in radii that vary with pipe sizes and insulation thickness. — GENERAL ALUMINUM SUPPLY CORP., 1506 Eastern Ave., Kansas City 26, Mo.

MADE RIGHT — MADE RIGHT

where you need them and sold through stock carrying distributors throughout the South.

FAIRBANKS TWO WHEEL AND PLATFORM HAND TRUCKS

A full line to cover your every material handling need. Ask for Catalog No. T-54.

Fig. 9215-S
General Purpose Truck

FAIRBANKS CASTERS AND WHEELS

— featuring patented "LOCKWELD" STEEL CASTERS WITHOUT A KING-PIN — full line of industrial wheels. Ask for Catalog No. C-57.

Series "23" "LOCKWELD" Double Ball Race Caster and Vulcanized Rubber Tired Wheel.

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THE FAIRBANKS COMPANY

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ROME, GEORGIA

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Southern News Briefs — Continued from Page 13

Cambar Sells Charleston Plumbing

The Cameron & Barkley Co. has sold its Plumbing Department to two of their former employees, **Rufus Barkley, Jr.** and **Walter Bilbro** of Charleston, South Carolina.

R. C. Barkley, Sr., Chairman of the Board stated that the company in the past has sold many of its departments to former employees to give the company a greater concentration in the industrial supply field.

Along these lines, Cambar has organized Divisions to give more specialization in the fields of power transmission, materials handling, safety equipment, piping, tooling supply, and machine tools, with a specialist heading up each Division.

The Cameron & Barkley Co. maintains Executive Offices and a Central Warehouse in Jacksonville, Fla., with Branches in Bartow-Mulberry, Miami, Orlando, Tampa, Fla., Charleston, S. C. and Savannah, Ga.

Kalamazoo Tank — SE

Herman Dykema, formerly Assistant Sales Manager of the Machine Tool Division of **Kalamazoo Tank and Silo Company,** has been promoted to District Sales Manager for seven southeastern states to include Alabama, Florida, Georgia, Tennessee, North and South Carolina, and Virginia. He will reside in Atlanta.

Stran-Steel Acquires Metallic Building

Charles LeB. Homer, president, **Stran-Steel Corporation,** Detroit, has announced the Company's acquisition of Metallic Building Company, Houston, Texas.

Stran-Steel is a division of National Steel Corporation. It manufactures a nationally distributed line of buildings and architectural products as well as a line of steel products for the railroad industry.

Metallic is the leading Southwestern producer of pre-engineered and custom designed metal buildings for industry, agriculture, and commerce.

Mr. Homer, who becomes president of Metallic Building Company, stated that its acquisition by Stran-Steel will involve no operating or personnel changes. Operating management of Metallic will remain under the direction of Charles R. McDaniel, vice president and general manager, and Gilbert L. Leach, vice president, sales.

Metallic will continue to produce its present line of buildings under the Metallic trade name.

718-7

Safe Operation Of

OVERHEAD VALVES

with a

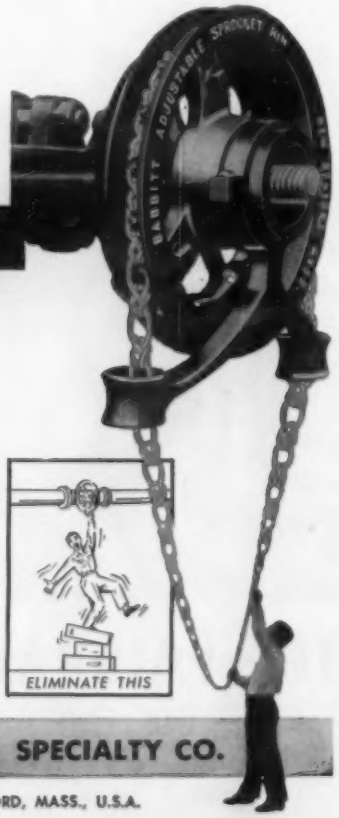
Babbitt

Adjustable

SPROCKET RIM

with Chain Guide

- Simplifies pipe layout
- Fits any size valve wheel
- Easy to install and operate
- Operates any valve from plant floor
- Time and money saving fixture
- No maintenance; first cost only cost
- Packed, completely assembled, one to a carton
- Hot galvanized, rust-proof chain available for all sizes
- Easy to follow instructions with each unit
- Your supplier carries complete stocks
- Write for new descriptive catalog sheet and prices



Babbitt STEAM SPECIALTY CO.

3 BABBITT SQUARE, NEW BEDFORD, MASS., U.S.A.

Guth — Ky. & W. Va.

The Edwin F. Guth Company, manufacturers of lighting fixtures, has appointed **Fred MacRae** their new lighting representative for Southern Ohio, most of Kentucky and Southwestern West Virginia.

Mr. MacRae replaces Tom Marshall who has recently moved to Florida.

Fred MacRae has over 14 years of experience in the lighting field. He has worked closely with architects, engineers, distributors and contractors, and is highly skilled and trained in all phases of illumination. He resides at 6503 Tyne Ave., Cincinnati, Ohio.

Singer Military — SW

The Air Equipment Sales Co., 2608 Inwood Road, was appointed to handle Southwestern operations of the **Singer Military Products Division**, according to manager Frederick W.

Howells. He said that **Victor J. Sykes**, head of the Dallas firm, will personally take charge of Singer Military business in the territory, which includes Texas, Arkansas, Louisiana, Kansas, and Kansas City, Mo.

The Singer Military Products Division combines the facilities of HRB, Inc., State College, Pa., research and development firm specializing in electronics communications and infrared; Diehl Manufacturing Company, Finderne, N. J., designers and manufacturers of servomotors and electrical and electronic components; and Singer-Bridgeport, manufacturers of precision replica optics and electromechanical components.

Hunt Valve — Atlanta, Ga.

Biever Air & Hydraulic Equipment of 254 E. Paces Ferry Road, N.E., Atlanta 5, Georgia is the newly appointed representative for air and hydraulic control valves of **Hunt Valve Co.**, Salem, Ohio in the Atlanta territory.

Southern Water Conditioning — N. C.

H. B. Leighton, Carolina Water Clinic, Durham, North Carolina, has been appointed Distributor and Manufacturer's Agent for SOWACO products (water conditioners and softeners) for the State of North Carolina.

SOWACO products are manufactured by **Southern Water Conditioning, Inc.**, St. Petersburg, Florida.

Around-the-clock operations at the Champion Paper and Fibre Company's sprawling Pasadena, Texas, plant called for illumination of a million square feet of wood storage area. And just thirty-two 1,000-watt Wide-Lite area lights were required to provide the answer – uniform coverage without distracting glare or dangerous dark areas.

Designed especially to enhance the unique characteristics of color-corrected mercury vapor lamps, Wide-Lites bring *new dimension* to area lighting. They produce broad patterns which provide smooth, even coverage without hot spots or dark shadows. The patterns may be accurately plotted to determine the exact number of units needed to provide any desired level of illumination.

Ruggedly constructed from cast aluminum alloy, Wide-Lites are finished in aluminum epoxy paint for corrosion control. Outdoor models are sealed with tempered glass lens, and re-lamping is accomplished without disturbing the seal of the lens. Exclusive built-in heat radiating fins limit lamp temperatures to the most efficient range. A choice of reflectors is available on all models, and sizes range from 100 watt to 1000 watt.

To assist you in planning efficient working coverage of outdoor working areas, Wide-Lite engineers have prepared a unique group of transparent plotting curves. Write today for your set!

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P. O. Box 191 • Houston 1, Texas
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OUTDOOR AREA LIGHTS • INDOOR LUMINAIRES • SPORTS LIGHTS • PROTECTIVE LIGHTS

Southern News Briefs (Continued)

Reynolds Aluminum Supply Seminar — Ky.

An all-day welding and finishing seminar was held recently at the new **Reynolds Aluminum Supply Co.** building in Louisville, Ky. On-the-spot demonstrations of the latest arc, tungsten arc and stud welding, as well as arc cutting and color anodizing were conducted by Graham Manufacturing Co., Air Reduction Sales Co., Linde Air Products Co., the Nelson Stud Welding Div. of Gregory Industries and Reynolds Metals Co. Over 500 persons attended the clinic and took part in the discussion period following the morning's demonstrations.

E. L. Stephens, manager of the new branch, considered the seminar to be a complete success.

The clinic marked the formal opening of Reynolds Aluminum Supply Company's new branch in Louisville, according to **Paul H. Fox,** President of the Atlanta headquartered firm. The branch is one of ten metals and building materials warehouses in the company's network. The building was engineered by Butler Manufacturing Company and is entirely covered with aluminum.

In addition to the demonstrations and discussion, the day's program included a buffet luncheon and tours of the new building conducted by Reynolds personnel.

A. M. Byers — Ga.

G. C. Kimbrough has been assigned as a field service engineer in **A. M. Byers Company's** Atlanta Division office.

Prior to joining Byers, Mr. Kimbrough was associated with The Pure Oil Company as a lubrication sales engineer, and with Sinclair Refining Company as a test engineer.

A graduate of Georgia Institute of Technology with a bachelor of science degree in mechanical engineering, he is a member of the Society of Automotive Engineers, American Society of Lubrication Engineers and Chattanooga Engineers Club.

McQuay — South

Appointments of new sales representatives for McQuay heating and air conditioning products have been announced by A. R. Flynn, sales manager of the heating and air conditioning division of **McQuay, Inc.,** Minneapolis.

They are: **Lamb Engineering Co.,** 2125 Maryland Avenue, Baltimore, and **Richard K. Peck, Jr.,** 3110 West Lambright Street, Tampa, Florida.

Evans Packing Company, Dade City, Fla., uses Brook Motors for refrigeration throughout their plant—one of the finest in the industry. Three of seven Brook Motors are shown on vital refrigerant compressors used in freezing and storage of concentrated citrus juices—shut-downs cannot be tolerated—an ideal spot for Brook Motors. There are no finer motors built, yet they cost less than ordinary motors. Dealers and Service Centers everywhere. Send for literature.

SINCE 1904 BROOK MOTOR CORPORATION

"world's most respected motor"

BROOK MOTOR CORPORATION

3302 W. Peterson Ave., Chicago 45, Illinois

In Canada: Brook Electric Motors of Canada, Ltd. 250 University Ave., Toronto.

Factory Representatives, Warehouses, Dealers in Principal Cities.

Middle South Utilities, Inc.

Election of **W. Donham Crawford** as Vice President of **Middle South Utilities, Inc.** has been announced.

Mr. Crawford, who served as Assistant Secretary and Assistant Treasurer since June 14, 1956, is a native of Little Rock, Arkansas.

Before joining Middle South in January of 1955, Mr. Crawford spent four years with the Savannah River Operations Office of the Atomic Energy Commission. Prior to this he had been Chief, Office of Science and Technology of the Pan American Union, Washington, D. C.

Burgess-Manning — Ark., La. & Miss.

The appointment of the **Lynn McGuffy Co., Inc.,** as sales representatives of the **Industrial Silencer Division of Burgess-Manning Company** has been announced. The company will be active in the sale of Burgess-Manning snubbers for the elimination of pulsation in gas pipe line systems and excessive intake and exhaust noise from internal combustion engines, compressors, blowers, etc.

The Lynn McGuffy Co. was founded by Lynn McGuffy, president, in 1952 as a sales and service organization for equipment used in gas and oil pipe lines, and compressor installations.

From its headquarters in the Sklar Bldg., Shreveport, La., the company will represent Burgess-Manning in Southern **Arkansas,** Northern **Louisiana** and Northern **Mississippi.** In addition to Lynn McGuffy, Harry Tindel, Vice President at Shreveport, and Carrol Bagby, Sales Engineer, with headquarters at Baton Rouge, will be particularly active in the promotion of Burgess-Manning Pulsation Snubbers.

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boiler maintenance with.....

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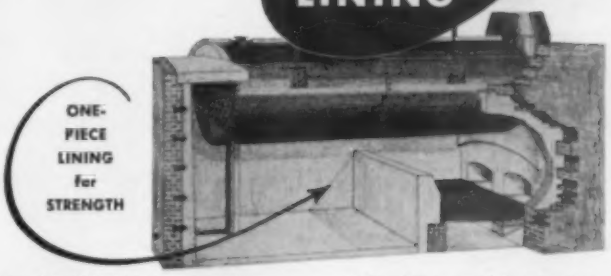

For original installations or repairs—none compares with economical, long-life PACO PLASTIC! Made from the mineral pyrophyllite in three grades with P.C.E. ranging from 3040° to 3225° (cone 34-35). Material does not soften below rated fusion point. Forms a solid, joint-free monolithic lining that prevents spalling, gas and heat leakage. Quickly applied by unskilled labor and can be fired immediately. Free estimates!

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- Dillon Supply Company in Raleigh, Rocky Mount, Goldsboro and Durham, N. C.
- Queen City Engineering Co., Charlotte, N. C.
- Kincaid Engineering Co., Gastonia, N. C.
- J. L. Goodman & Son, Hickory, N. C.
- Joe Moore & Company, Raleigh, N. C.
- Summers Hardware & Supply Company, Johnson City, Tenn.
- McBurney Stoker & Equip. Co., Atlanta, Ga.
- Brown-Rogers-Dixon Co., Spartanburg, S. C.
- Way Fire Brick Co., Churchland, Va.
- Muse, Inc., Johnson City, Tenn.

Excessive abrasive conditions now solved!

Conveyor belting subjected to heavy abrasive work can now be readily joined for maximum service with the new CRESCENT Countersunk Belt Fasteners. The CRESCENT Countersunk-Head Rivets are driven flush with the surface of the CRESCENT Countersunk Plates, thereby reducing wear to a very minimum.

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CRESCENT BELT FASTENERS fastest, most durable and most economical method of joining conveyor, elevator and transmission belting

Southern News Briefs (Continued)

L. L. Williams & W. S. Mann

Armco Personnel Changes

Armco Drainage & Metal Products, Inc., a subsidiary of Armco Steel Corporation, has announced the following promotions:

Warren S. Mann, vice president and manager of Armco Drainage's Dixie Division in Atlanta, Ga., will become vice president of sales.

L. L. Williams, assistant manager, Dixie Division, will replace Mr. Mann as division manager at Atlanta.

Mr. Mann was employed by the Dixie Division of Armco Drainage in 1934. He held the positions of sales engineer, chief engineer, sales manager and finally division manager and vice president with headquarters in Atlanta, Ga.

Joining Armco Drainage's Dixie Division in Atlanta in 1936, Mr. Williams was made credit manager in 1937 and office supervisor in 1938. Later, he moved up to special assistant to the division manager, state sales manager and division sales manager. He was promoted to assistant division manager in January of this year.

Bailey Meter — Fla.

Bailey Meter Company, Cleveland, Ohio, has announced an address change for its district office in Jacksonville, Fla.

R. T. Keller, resident engineer is in charge at the new address, 1143 Mary St., Jacksonville 7, Fla.

Houston Instrument

The Houston Instrument Corporation has been organized for the development, manufacture and sale of laboratory instruments and specialized industrial instruments for the petroleum and chemical industries. It will have offices at 1717 Clay Ave., Houston 3, Texas.

Houston Instrument has acquired manufacturing and sales rights on X-Y recorders, strip chart recorders and d-c amplifiers formerly manufactured and sold by the Industrial Instruments Division of Mandrel Industries, Inc.

The new organization will be headed by **E. V. Hardway, Jr.** of Houston. Previously, Mr. Hardway was Vice President of the Flight Research Engineering Corporation in Richmond, Virginia, and later organized the Beta Corporation, which manufactured a line of vibration detectors for rotating equipment. Beta was acquired by Robertshaw-Fulton Controls in 1956.

The Laboratory Instruments Division will be headed by **Jack Yeiser.** Previously Mr. Yeiser managed the Industrial Instruments Division of Mandrel Industries, Inc.

Same formula as famous Kroil that has pleased 14,000 industrial users for 10 years or more.

Loosens stuck together metal parts, bushings, bearings, bolts, screws, pipe, etc., "anything from an embalmer's needle to a bulldozer," one customer said.

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Combustion Engrg.

Robert M. Hatfield, formerly vice president in charge of manufacturing of **Combustion Engineering, Inc.,** has been appointed vice president and general sales manager in charge of domestic sales, the company announced today. He will report to Donald S. Walker, vice president and director of sales.

During World War II Mr. Hatfield was on loan to the War Production Board and ultimately became deputy vice chairman for production for all war industries. During the Korean War he organized and headed the Power Equipment Division of the National Production Authority and later became vice chairman of the Munitions Board of the Defense Department.

Mr. Hatfield is an engineering graduate of Purdue University and joined Combustion in 1934. He served as assistant general sales manager and general manager of the western division before being elected a vice president in February, 1952.

Layne & Bowler — Memphis, Tenn.

C. E. Ponkey of Memphis, Tenn., has been named president of **Layne & Bowler, Inc.,** worldwide water well drilling organization with headquarters at Memphis.

Mr. Ponkey succeeds **W. H. Reeves,** who is retiring after serving 52 years in various official capacities for Layne & Bowler, Inc., but who will continue to serve in consulting capacity as a vice president.

Mr. Ponkey was formerly executive vice president of Layne & Bowler, Inc., which was founded in 1882, employs more than 3,500 persons in all parts of the world, and maintains more than 500 drilling and service rigs in constant use.

The name DIXISTEEL may be new to you, but to many of our customers it is as well known and respected as the word *sterling* on silver.

There is never a question about quality when the bars and shapes you buy bear the name DIXISTEEL.

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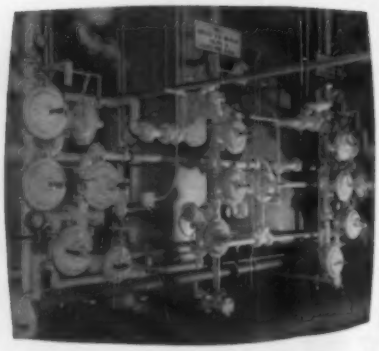
THESE NEW IDEAS HAVE COME FROM

ILLCO-WAY DESIGNERS AND BUILDERS

MODERN EQUIPMENT FOR ionXchange



Illinois Water Treatment Co. was incorporated over 20 years ago to use the newly-discovered resins in the development of ionXchangers.

1942 By this time, IWT had already built more than 50 successful multi-bed ionXchangers (some of which are still in use today).

1943 IWT brought "automation" to ionXchange with the introduction of automatic ionXchangers, some of which were very large. (Some of *these* are still operating today, also.)

1947 This was the year when IWT brought out the first large (400 gpm) ionXchanger for silica removal.

1949 IWT built the first commercial *Mixed Bed* ionXchanger.
(U.S. Patents 2605084 2771424)

1954 A huge 5,000 gpm fully-automatic mixed-bed ionXchanger was designed and built by IWT to remove silica from make-up water for high-pressure boilers. This plant has now de-ionized over SIXTY BILLION pounds of water.

1957 IWT introduced "Counterflow," the first really new idea in multi-bed ionXchangers since the introduction of silica-removal techniques. (Patent pending.)

THIS EXPERIENCE CAN MEAN A LOT TO YOU

These ideas, and other IWT developments, can mean reduced costs, improved operations, and greater efficiency in your plant. *Check with your IWT representatives.*

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CANADIAN DIST.: Pumps & Softeners, Ltd., London, Ont.

Southern News Briefs (Continued)

Refresher Course for A-C Motor Distributors — Ala.

A motor refresher and training course for four distributors was held recently in Birmingham by **Allis-Chalmers Mfg. Co.** Attending were representatives from Alabama Electric Co., Dothan; the Tuscaloosa Electric Supply Co., Tuscaloosa, and the Electrical Repair and Service Co., and Mill & Textile Supply Co., Inc., both of Birmingham.

The meeting included a rewind demonstration in the shops of Electrical Repair and Service Co. using "Silco-Flex" insulated coils. **Duane W. Hertel** (pictured), application engineer, Allis-Chalmers Norwood (Ohio) Works, explained the technique.

Other speakers included George H. Hoffman, manager, and William E. Watson, sales representative, Allis-Chalmers Birmingham district; E. T. Cuddeback, manager, general products division sales, Southeast Region, and William D. Dineen, supervisor, distributor sales, electrical department, Norwood Works.

Schutte & Koerting — Carolinas & Florida

Schutte & Koerting Co. of Cornwells Heights, Pa. has announced the appointments of **Joel E. Martin & Co.**, 618 E. Morehead St., Charlotte 3, N. C. and **Process Equipment & Engineering Co.**, 2440 Jonila Ave., Lakeland, Fla. as company representatives in North and South Carolina and Florida respectively.

The companies will provide sales and engineering service for all SK products including jet apparatus of all types, Rotameters and flow indicators, valves, gear pumps and heat transfer equipment.

Joel Martin is in charge of the Charlotte organization while **Robert Safford** is in charge of the Florida representative for the state, east of the Apalachicola River.

Rivett — W. Va.

Rivett Lathe & Grinder, Inc., Boston, Mass., has appointed **Scott Equipment Company**, 3825 Jacob Street, Wheeling, West Virginia as exclusive distributor in West Virginia and Southeastern Ohio for Rivett Air and Hydraulic Valves, Cylinders and Power Units.

In representing the Rivett Hydraulic and Pneumatic line, the Scott Equipment Company offers a varied knowledge in fluid powered engineering. William E. Scott has had 20 years experience exclusively in the application of Air and Hydraulic Components and the design of Air and Hydraulic Circuits. Many of the hydraulic devices and controls found in automated processes in the Wheeling area have been designed and specified by Scott Equipment.

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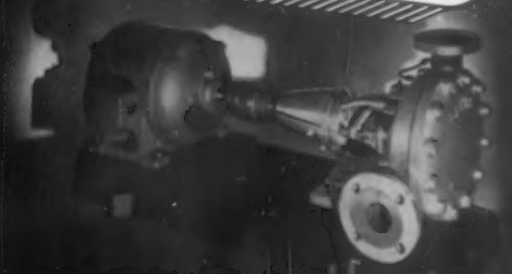
LEWIS CENTRIFUGAL PUMPS

BULLETIN 131



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- ***no clamps, no washers,***
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SPEED-RAIL Fittings, and the heavier-duty NU-RAIL Fittings, are the original slip-on structural pipe fittings. They are also the simplest and strongest fittings for building pipe structures.

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Southern News Briefs (Continued)

J & L Steel — SW

Two changes in district sales offices of **Jones & Laughlin Steel Corporation** have been announced.

Howard L. Tomb, has become District Sales Manager, Memphis office, succeeding the late E. E. Hoehle. He formerly was Resident Manager of Sales at Dallas.

James R. Doran, succeeds Mr. Tomb as Resident Manager of Sales at Dallas. He formerly was a salesman in the Pittsburgh office.

Mr. Tomb, who has had an extensive sales career in the steel industry, joined J&L as a salesman in the Pittsburgh office in 1944. He was transferred to the Atlanta sales office in 1951, and was appointed Dallas Resident Manager of Sales in 1955.

Byers — Richmond

A. M. Byers Company has announced the opening of a new sales office in Richmond, Va.

Heading up the new office, located at 1-D East Grace Street, is **Douglas F. Williams,** a field service engineer previously assigned to the company's Boston, Mass. office.

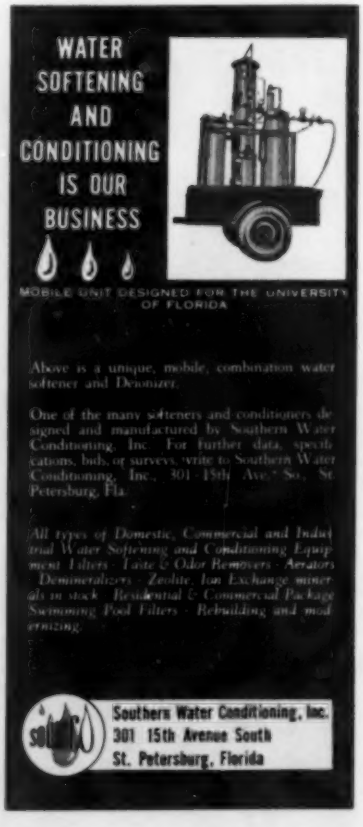
Borg-Warner — La.

Borg-Warner Mechanical Seals has announced that Larry Blunt, recent University of Houston graduate with a B.S. degree in Mechanical Engineering, has just completed field training in the Houston (Texas) area. Mr. Blunt will be assigned to the Baton Rouge, La. office as a sales representative.

Rawlplug — Ga.

Paul A. Eggli, Jr. has become manager of the **Rawlplug Atlanta Company,** it was announced by A. J. McEwan, vice president-sales of the Rawlplug Company, Inc., 200 Petersville Road, New Rochelle, N. Y.

With office and warehouse at 295 Hayden St., N. W., Atlanta 13, Rawlplug Atlanta supplies masonry anchoring products to contractors, industrial users and distributors throughout Georgia, Alabama, and central Tennessee.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All types of Domestic, Commercial and Industrial Water Softening and Conditioning Equipment Filters - Taste & Odor Removers - Aerators - Demineralizers - Zeolite Ion Exchange minerals in stock - Residential & Commercial Package Swimming Pool Filters - Rebuilding and modernizing.
Southern Water Conditioning, Inc.
301 15th Avenue South
St. Petersburg, Florida

Southern News Briefs (Continued)

Howard S. Davies | E. F. Longnecker | Vernon L. Ekblad

Jeffrey — S & SW

The Industrial Division of **The Jeffrey Manufacturing Company,** Columbus, Ohio, has realigned its field office operations as part of an over-all plan designed to strengthen its marketing effectiveness.

Named Regional Sales Manager — East Central Region, is **Howard S. Davies.** He previously managed the Pittsburgh office. Davies will be responsible for the field activities of the Bluefield, W. Va. District office.

Elmer F. Longnecker becomes Regional Sales Manager — Central Region. He will coordinate operations of the Chicago, Detroit, Milwaukee and St. Louis trading areas.

The appointment of **Vernon L. Ekblad** as Regional Sales Manager—Southern Region, completes the list of new Southern regional assignments. Formerly District Manager at Houston, Ekblad assumes responsibility for the over-all operations of the Birmingham, Houston and Jacksonville offices. Replacing Ekblad is **Charles E. Lawall,** most recently a sales engineer with the Philadelphia office.

Other personnel changes in the South include the assignment of **James C. Elliot,** a sales engineer with the Jacksonville office, to the Raleigh, North Carolina branch. **Thomas R. Bodden** will service Jeffrey customers in the Mobile marketing territory. These men will report to the Jacksonville and Birmingham offices respectively.

Parker-Hannifin — Tulsa, Oklahoma

Industrial Gasket and Packing Company, Inc., 1015 East Third Street, Tulsa, Oklahoma, has become a distributor of synthetic rubber o-rings manufactured by **Parker-Hannifin Corporation.**

Charles J. Donovan is president of the distributing firm with headquarters in Oklahoma City. **H. W. Moore** is manager of the Tulsa operation where a wide range of Parker o-rings will be stocked for prompt servicing of customer requirements.

ENGINEER WANTED

Maintenance engineer experienced in operation of large laundry and dry cleaning plant installations in Southeast. Must be experienced in welding, electrical work and machinery rebuilding. Whiskey addicts requested not to apply. Send replies to Box 256, Southern Power & Industry, 806 Peachtree St., N.E., Atlanta 8, Georgia.

L. S. Steel Supply — Ala.

Arthur G. Hill, assistant district manager in Birmingham, Ala. for **United States Steel Supply Division,** is retiring after 19 years of service with the United States Steel Corporation.

Mr. Hill has been in Birmingham since 1952, when the former Gerrard Steel Strapping Company, a U. S. Steel subsidiary, transferred its branch warehouse and sales office to Birmingham from New Orleans. He served as Southern district manager for Gerrard until that company was merged with United States Steel Supply, in 1957. At that time he became assistant district manager of the supply division.

Joining United States Steel in 1940, as Texas representative for Gerrard, he was promoted to the Southern district managership in 1948.

Acme Industries — Ky.

Olan J. Hill, of Louisville, Ky., has been appointed a sales engineer for **Acme Industries, Inc.,** of Jackson, Mich.

Mr. Hill, in association with Martin W. Weber, will sell Acme air conditioning systems and refrigeration equipment throughout Kentucky.

For many years Mr. Hill has sold heating, ventilating and air conditioning equipment for commercial, industrial and public building use. Mr. Weber has been associated with the Olan J. Hill Co. for several years.

General Electric — Va.

Newly appointed in **General Electric's** Service Shops Department is **A. W. Warren,** manager of the Richmond Service Shop.

The department maintains a coast-to-coast network of service facilities for repair and overhaul of a wide range of electrical equipment from tiny instruments to locomotives.

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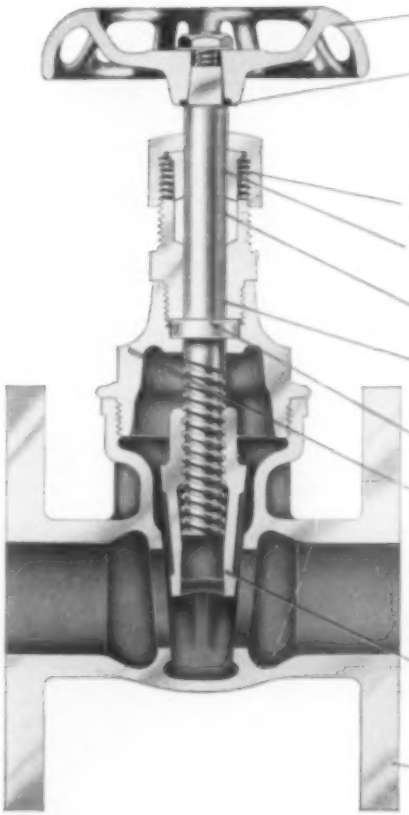

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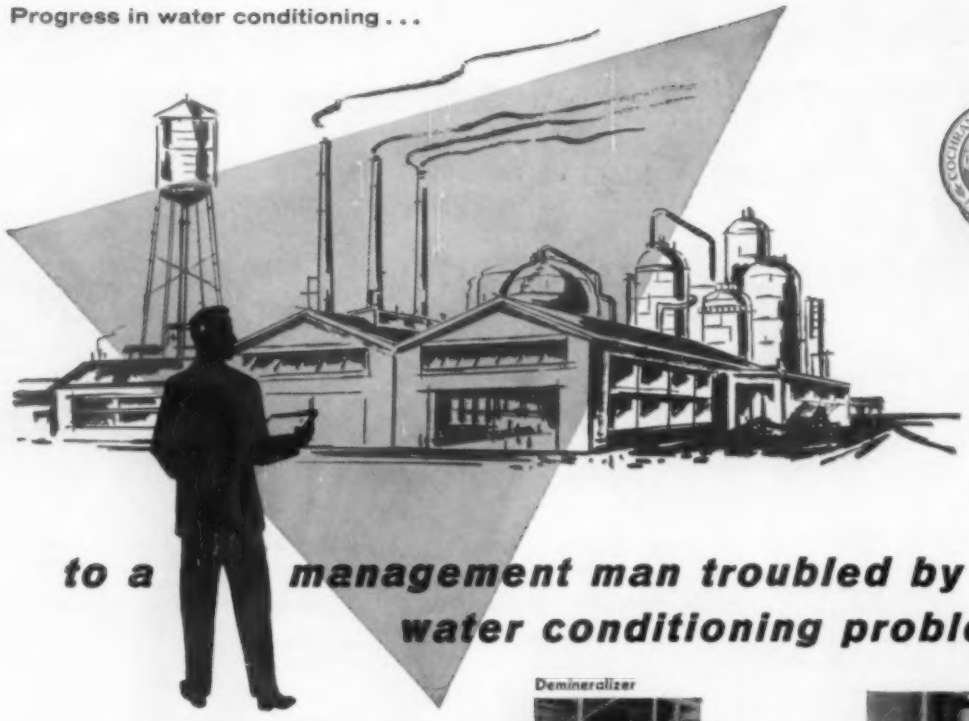

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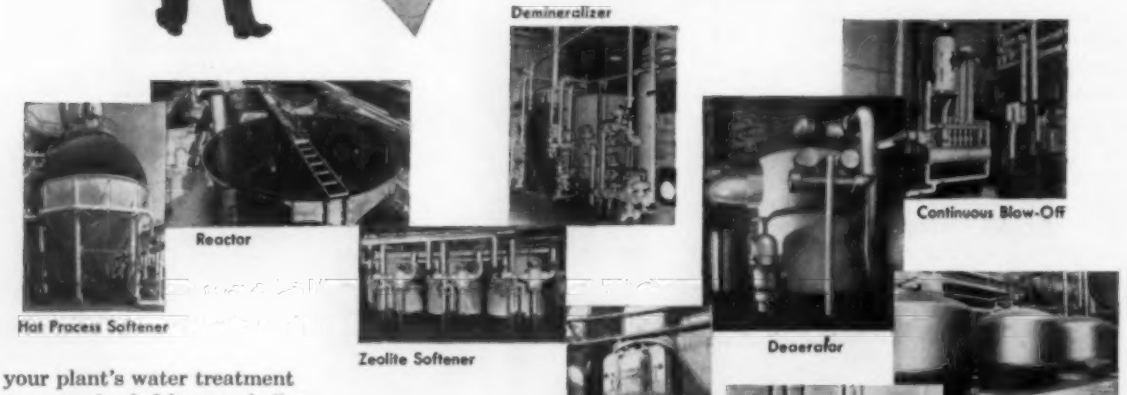

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